ABSTRACT

Title of thesis: THE PSYCHOLOGY OF MARTYRDOM

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In recent decades, social scientists' interest for the topic of self-sacrifice has been accentuated by the growing incidence of suicide attacks around the world. The present set of twelve studies aimed to investigate the psychological underpinnings of the readiness to self-sacrifice by (1) creating a new tool to quantitatively assess individuals' propensity toward self-sacrifice (Studies 1-7), (2) investigating the motivational forces potentiating self-sacrifice (Studies 8-10), and (3) finding ways of redirecting these forces in a peaceful direction (Studies 11 and 12). Beyond creating a psychometrically sound measure of self-sacrifice, present research guided by the quest for significance theory (Kruglanski, Chen, Dechesne, Fishman, & Orehek, 2009) indicated that individuals' motivation to self-sacrifice is augmented when their sense of personal worth is lowered. In addition, results indicated that when the quest for personal significance is activated in conjunction with hostile ideologies, individuals are more likely to relinquish their physical and emotional well-being to harm others.

THE PSYCHOLOGY OF MARTYRDOM

By

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Dedication

This dissertation is dedicated to my friends and family for their unwavering support and to Anastasia, Mimi, and Alex for their unconditional love throughout the years.

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I would like to thank my three mentors, Robert Vallerand, Arie Kruglanski, and Michele Gelfand from whom I have learned three invaluable life lessons: Be passionate, be a locomotor, and be a team player.

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Introduction

He who has a why to live for can bear almost any how.

-Frederich Nietzsche

Dying for a cause; the idea is somewhat perplexing. How could anyone in their right mind be willing to sacrifice their life for a given cause? Are we not hedonist creatures striving to survive above all? Social scientists' interest for the topic of self-sacrifice has been accentuated in the last decades, especially in light of the growing popularity of suicide bombing as a weapon of choice in recent years. However, the idea of self-sacrifice or *martyrdom* is not new: Accounts of individuals dying on the altar of religious and political ideologies have existed long before the tragedy of 9/11, the 1991 assassination of Rajiv Gandhi (the Indian prime minister) by terrorists committed to the Tamil independence in Sri Lanka, or even the crucifixion of Jesus Christ millennia ago. Yet, it appears that no quick and easy answer can be conjured up to explain this phenomenon.

In an attempt to understand the motivational underpinnings of self-sacrifice, social scientists have laid considerable emphasis on individual-level characteristics associated with suicide terrorism. In time, it has become increasingly clear that this approach is unsatisfactory: Profiling predicated on demographics, level of education, and gender has been discredited (Atran, 2003), whereas the notion that terrorists suffer mental illnesses has been abandoned (see Post et al., 2009). A different approach delineated the problem of suicide terrorism mainly in terms of sweeping social forces (e.g., social networks) conducive to individuals' radicalization (Sageman, 2004; 2008). Over the years, psychological terrorism has attempted to fuse both perspectives in an interactionist approach giving particular attention to the link between individual and group-level process. One such recent attempt is found in the work of McCauley

and Moskalenko (2011) which highlights several individual-level variables considered to promote adherence to groups and their respective ideologies. Though of considerable interest, such attempt has been limited in its ability to make generalized claims due to its reliance on small samples and its qualitative approach (e.g., interviews, archival data). Additionally, rather than providing a concise conceptual framework to understand suicide terrorism, long lists of potential motives have been speculated upon whose interrelations have not been explicated thus far. The present research program addresses these limitations by empirically investigating the concept of self-sacrifice (or martyrdom) using terrorist and non-terrorist samples and investigating those from a novel theoretical framework.

Essentially, the goal of this project is to understand *why*, and *under what circumstances*, individuals are willing to sacrifice their lives for a cause. The following research program is divided into three separate sections. Specifically, research detailed in this dissertation aims to (1) create a new tool to quantitatively assess individuals' propensity toward self-sacrifice for a given cause, (2) investigate the motivational forces potentiating self-sacrifice, and (3) study ways of redirecting these forces in a constructive direction, paving the way to conciliation, conflict resolution, pro-social behaviors, and harmony in intergroup relations.

Section 1. Aside from the difficulty of getting access to individuals that have been involved in terrorism, researchers have lacked the necessary psychometric tools to measure individuals' readiness to self-sacrifice. Without such an instrument, hypothesis testing and theoretical refinement remain limited. To address this issue, research included in Section 1 aims to create and validate a survey to measure individuals' disposition to forfeit things of high value (e.g., wealth, relationships, life) in order to support an important cause. The *self-sacrifice scale* will thus address an important gap in the current literature on the psychology of terrorism and

provide a useful research tool to reliably predict self-sacrificial behaviors. Additionally, the creation of the self-sacrifice scale will furnish a means to empirically test theoretically-driven hypotheses, affording a deeper understanding of why, and under what circumstances, individuals are motivated to self-sacrifice for an important cause; these notions are explored further in the second section of this proposal as described below.

Section 2. The second phase of my research program will include experimental studies pertinent to the phenomenon of martyrdom. Specifically, using the *quest for significance theory* (Kruglanski et al., in press; Kruglanski, et al., 2009) as a guiding framework, I propose that individuals are fundamentally motivated to attain *personal significance* ("to be someone", "be recognized", "to matter") by attaining what is culturally condoned as valuable and worth attaining. This conceptual framework is useful in allowing research to move forward by highlighting critical questions pertaining to the psychology of terrorism.

In line with the quest for significance theory, I posit that when the quest for personal significance is awakened (by significance loss or the potential for significance gain) individuals are willing to go to great lengths to restore (or enhance) their sense of personal significance. Among the varied means of attaining *significance*, one of the most extreme is to sacrifice one's life for a given cause valued by one's society. In light of these notions, Section 2 includes experiments testing several predictions afforded by the *quest for significance* theory. These experiments utilize different methods of activating the quest for personal significance (e.g., failing an IQ test, a recall of rejection by others) and a series of assorted methods to measure individuals' propensity toward self-sacrifice, including the self-sacrifice scale, emotional, and behavioral measures (e.g., reaction times). It is expected that individuals that have lost significance (for any reason) would show greater readiness to self-sacrifice than individuals for

whom the goal of personal significance is not activated. Support for these hypotheses would constitute evidence that the quest for significance is a potent catalyst of self-sacrificial behavior for any valued cause and thus, raise the possibility that this motive can be redirected toward pro-social behaviors as well as destructive ones.

Section 3. The third section of my research program examines the influence of *ideologies* on self-sacrificial behavior by awakening the quest for significance in ways similar to those described in the second section and by experimentally activating either destructive or peaceful ideologies. It is expected that when the quest for significance is activated concomitantly with destructive ideologies, individuals will become motivated to self-sacrifice for an important cause and would be willing to hurt others to achieve their goals. In contrast, individuals for whom the quest for significance is activated concomitantly with peaceful values would be inclined to engage in peaceful behaviors. If corroborated, these hypotheses would highlight the importance of ideologies in promoting peace and would consist of, arguably, the first empirical evidence that the *quest for significance* can be channeled toward the establishment of harmonious and peaceful human relations.

In summary, by developing a new research tool to measure people's readiness for self-sacrifice, the present research program aims to shed light on two major issues: (1) *why*, and under what conditions, individuals are willing to self-sacrifice for an important cause and (2) *how* this motivation can be redirected toward peaceful behavior. Overall, this research program is based on the assumption that understanding the significance quest and the conditions of its fulfillment may be crucial for defusing and/or rechanneling suicide terrorism in its extreme forms.

The Concept of Martyrdom

A martyr commonly refers to “a person who sacrifices something of great value and especially life itself for the sake of principle” (Merriam-Webster’s Online Dictionary, 2012). It also refers to the suffering of persecution for refusing to renounce to a set of beliefs or a cause (usually religious).

Interestingly, the notion of death and suffering is a late addition to the definition of martyrdom. In Ancient Greek, the term martyr (*martys* or *martus*) literally means “witness”. Perhaps the most emblematic witness in Christianity is Paul the Apostle who, according to the New Testament, was appointed by God to receive divine revelations and *testify* to all men the things he would see and hear spiritually. Being a witness was a dangerous business in the days of early Christianity; it became increasingly associated with death and persecution, as Christians brought before roman emperors and governors bore witness to their religious beliefs and were sentenced to prison, torture, and death for their convictions.

The archetypical act of martyrdom in Christianity is of course the crucifixion of Jesus Christ on the orders of Pontius Pilate and its description in the Gospels. Christians have usually come to interpret the death of Jesus on the cross as an act of martyrdom because he died to provide forgiveness to sinners. From this central event onward, Christians have come to conceive that witnesses dying for their convictions follow the example of Jesus in offering up their lives for the Truth. This assertion is supported by religious scriptures that contend that Christians that would defend Christ before men would be confessed by Christ as His disciples in heaven, whereas those that deny their Lord and Savior would be rejected at the pearly gates by the Son of Man (Lk. 12: 8; Mt. 19: 32f.).

Martyrdom is not a concept unique to Christianity, it is also found in other Abrahamic religions. In Judaism, *kedoshim* (translated as Holy Ones) is a title given to those who have

sanctified God's name (*kiddush hashem*) by bringing honor, respect, and glory to God. One way of sanctifying His name is to be willing to sacrifice one's life rather than violating God's commandments (serving idols, committing murder, and committing incest or adultery). For instance, Jews killed by the Spanish Inquisition (see Netanyahu, 1995) because of failing to relinquish their religious convictions have been consecrated as Holy Ones. Similarly, the books of Maccabees recount numerous stories of Jews resisting Hellenic colonization and preferring to die rather than desisting the observance of Jewish customs. One such story, in 2 Maccabees, pertains to Hannah and her seven sons who suffered and died because they refused eating pork to obey king Antiouchus Epiphanes.

Akin to other major religious doctrines, martyrdom plays an important role in Islam. In Arabic, s*hahid* means both witness and martyr. The title and honor of shahid is generally given to soldiers fighting infidels and others who defend their religious convictions. The status of martyrdom (*Istishhad*) is also conferred to those who die of epidemic diseases, accidents, and infant mortality. Interestingly, one of the first martyrs in Islam is a woman named Sumayyah bint Khayyat who was murdered in AD 615 for espousing the beliefs of Islam a few years year after Muhammad's declaration of prophethood.

According to the Qur'an, suicide and martyrdom are distinct from each other. Whereas suicide is strictly prohibited (Qur'an: "And do not kill yourself, for God is merciful to you"), martyrdom is not; in fact, it is even encouraged with the promise of earthy rewards in heaven. The following passage from the Hadith (Bukhari, 52:54) exemplifies how martyrdom according to the prophet Muhammad is an act of remarkable devotion to God:

"I would love to be martyred in Allah's Cause and then get resurrected and then get martyred, and then get resurrected again and then get martyred and then get resurrected again and then get martyred."

Although most accounts of martyrs derive from the religious literature, several cases of secular martyrs are also documented. For instance, the death of the Greek philosopher Socrates (399 BC) is a secular example of martyrdom. Socrates, who had been found guilty of corrupting the mind of the youth, accepted death from hemlock (a poisonous plant) rather than giving up his ideals of enlightenment. Contemporary accounts of secular martyrdom also include soldiers from all nations protecting their country, especially the Japanese kamikaze during World War II and suicide attacks carried out by separatist Liberation Tigers of Tamil Eelam of Sri Lanka. Other, more peaceful examples of martyrs include political activists like Martin Luther King, Jr. who promoted the ideal of African-American civil rights in the U.S. and Mahatma Gandhi who vigorously fought British occupation of India by promoting non-violent civil disobedience.

Despite the historical, political, and societal importance of martyrdom across cultures, psychology has been relatively silent about the construct of self-sacrifice as such. In what follows, I elaborate on the psychology of self-sacrifice (or martyrdom) and describe ways in which it can be conceptualized.

What martyrdom is

I define martyrdom as the psychological readiness to suffer and sacrifice one's life for a cause. I posit that this cause needs to be grounded in a shared reality and therefore it needs to be *perceived* as socially condoned (a theme I develop later on in this manuscript). One important nuance of the definition of martyrdom regards individuals' relation to death: It is not because individuals value a cause to the extent that they would die for it that they are actually looking

forward to dying. Rather, their readiness for martyrdom reflects their devotion for the cause and the extent to which they consider defending their deepest convictions at all cost. In other words, they are ready to die, not because they do not value life, but despite the fact that they do. Based on this definition, notice that I use the term martyrdom and self-sacrifice interchangeably as I consider them functionally equivalent.

The concept of martyrdom shares some resemblance to other psychological constructs, while it also possesses its own unique aspects. First, it is intimately related to goal-commitment. Indeed, it would be troubling to find individuals entertaining to die for a cause without attributing considerable importance to it. However, goal-commitment is relatively non-specific with regard to concrete behavior. Martyrdom, on the other hand, is specifically related to sacrificial behaviors performed for a given cause.

The construct of martyrdom also shares some similarities with altruism. Both constructs reflect a propensity toward acting on behalf of others and self-effacement. However, martyrdom is distinct from altruism in several ways. For one, altruism is conceived as a general personality trait affecting a large spectrum of helping behaviors (Batson, 1987; Eisenberg, 1986; Rushton, Chrisjohn, & Fekken, 1981, for a discussion see Carlo, Eisenberg, Troyer, Switzer, & Speer, 1991). In contrast, martyrdom is specifically geared toward self-effacement for a given cause. Notice also that altruism does not necessarily entail relinquishing things of high value (e.g., well-being, wealth), whereas martyrdom does. In addition, altruism is conceived as being pro-social (e.g., Batson & Shaw, 1991); it is not necessarily the case with martyrdom. In fact, as I intend to demonstrate in my dissertation, martyrdom is a double-edged sword in the sense that it can lead either to pro-social or to destructive behaviors. Therefore, akin to philanthropists or others with an altruistic personality, individuals with a disposition toward martyrdom would be likely to help

others in need, sacrifice wealth and non-monetary possessions, and abandon important relationships if it supported their cause. However, I posit that individuals prone to die as martyrs are also likely to utilize very costly, and sometime non-normative, means such as enduring pain, harming others physically and psychologically, joining radical groups, and ultimately losing their life to support their cause.

What martyrdom is not

Strong and unshakable convictions often appear extreme vis-à-vis beliefs commonly held in a modern context of social relativism (Berger & Luckmann, 1966; Swoyer, 2010). Needless to say, people who are ready to die for their convictions risk being labeled as eccentrics, if not lunatics. However, it need not be the case that these individuals are disconnected from reality; one of the most profound teachings of social psychology after all, is that behaviors that appear as shocking and horrific can be undertaken by normal individuals (e.g., recall the famous Milgram experiments, 1963; Zimbardo's Stanford prison experiments, 1974). As we tend to demonize what we cannot understand, social psychology teaches us that references to psychopathologies can often be cast aside by understanding the vast social forces that energize human behavior. This is not different from the construct of martyrdom. Consistent with researchers that have theorized and adduced evidence that suicide terrorism is not associated with psychopathology (Bongar, Brown, Beutler, Breckenridge, & Zimbardo, 2007; Merari, 2010; Post, et al., 2009), and that extremist actors could in fact be more rational than previously expected (Kruglanski & Fishman, 2006; Kruglanski & Orehek, 2009; Wintrobe, 2006), I posit, therefore, that martyrdom is unrelated to mental illness. Depression, auto-mutilation, suicidal ideation and any other desire to die *do not* have any connection with martyrdom. This raises the question of what drives the willingness to die for a cause and why are human beings willing to sacrifice all for a single thing.

If supporting a cause outweighs the costs of dying for it, it must have important psychological and evolutionary meaning. One theory that proposes a framework to address these issues is the quest for personal significance.

The Quest for Personal Significance

Attempts to understand the motivational underpinnings of terrorism have abounded in recent years. Efforts directed at understanding this topic have produced a plethora of heterogeneous positions and perspectives. In a recent analysis of this literature, Kruglanski and colleagues (Kruglanski et al., 2009) have documented over 30 different motives listed as associated with suicide terrorism. Far from being exhaustive, this list includes motivations such as resistance to foreign occupation (Pape, 2005), honor, dedication to leader, social status, pain, personal loss, feminism (Bloom, 2005), humiliation, lack of alternative prospects, the need to belong (Stern, 2003), and emotions such as revenge and resentment (Ricolfi, 2005). Several attempts have been made to reduce the plurality of motivations into a smaller set of dimensions articulated in terms of *ideological reasons* and *personal causes* to become a suicide terrorist (Pedahzur, 2005; Taarnby, 2005).

Motives aggregated around the theme of ideological reasons included carrying out God's will and liberating one's occupied land (Atran, 2004; 2006), whereas motives centered around personal causes included lost honor, pain, and trauma (Bloom, 2005). In addition to ideological and personal motives, a third motivational category incorporating *social* duties and obligations has been also suggested. The latter category is apparent in the historical records of Japanese Kamikaze pilots during the Second World War (e.g., Ohnuki-Tierney, 2006) and other accounts of suicide terrorism (Bloom, 2005; Gambetta, 2005). This classification of motives, although helpful, is purely descriptive, and as Kruglanski and colleagues (Kruglanski et al., 2009) noted, it

"stops short of explicating the underlying dynamics of suicidal terrorism" (p. 334). Based on this reasoning, Kruglanski et al. (2009) offered a theoretical framework that would synthesize a dispersed literature with a single overarching motive believed to underlie suicide terrorism.

The *quest for personal significance* is the result of Kruglanski et al's (2009) attempt to interweave seemingly unrelated findings into a coherent framework. Building on the work of Victor Frankl (2000) and Abraham Maslow (1943; 1965), the theory posits that the quest for meaning or *personal significance* is a common human striving often reflected in people's need to "make a difference", "to matter", "to be someone" in socially prescribed ways. Kruglanski et al. (in press; 2009) proposed further that when personal significance is lost, human action is propelled toward restoring it. Similarly, when an opportunity for significance gain presents itself individuals strive to attain it. When significance cannot be restored directly it often can be reinstated vicariously. Substitute means affording restoration of significance abound. However, they all have something in common: For the most part, these means are usually condoned socially or at least are perceived as such. This is so because society greatly influences what people perceive as worth pursuing (e.g., through socialization and education). It follows that people are likely to engage in socially recognized means to gain societal significance (Frankl, 2000).

In line with this reasoning, the quest for personal significance theory predicts that individuals are likely to turn to group ideologies and collectivistic goals to restore their lost significance. In turn, collectivistic ideologies "elucidate what a significance gain according to one's group consists of and afford a way of preventing a significance loss involving adherence to these ideological dictates" (Kruglanski et al., 2009; p. 349). Implicit in the latter statement is that significance quest can lead either to engagement in violent or peaceful means depending on the

ideology supported by the group to which individuals have turned to restore their significance. Commitment to the group restores one's significance because it is rewarded in several ways (prestige, resources, feeling of belonging) and heroes and martyrs are remembered long after their death. By joining the collective memory of one's group, individuals can transcend death and live on in the memories of others (Elster, 2005). As Kruglanski et al. (2009) point out, "paradoxically, *the willingness to die in an act of suicidal terrorism may be motivated by the desire to live forever*" (p. 336).

Another important paradox is self-sacrifice and evolution; how can death for a cause be adaptive from an evolutionary standpoint? While it is possible to conceive that young adults may reproduce before committing their act of self-sacrifice, willingness to self-sacrifice and actual acts of suicide terrorism have also been documented in children. For instance, a report by Ruz al Yusuf (2008) about Hezbolla Shi'te youth movement "Imam al-Mahdi Scouts" revealed that thousands of children aged between 8-16 are indoctrinated with radical Iranian Islam to become martyrs for the sake of Allah. Nonetheless, the notion of self-sacrifice and evolutionary fitness can be reconciled. In fact, Victoroff (2009) has proposed that self-sacrifice may improve fitness in two ways. In the context of intergroup conflict, altruistic behaviors and commitment toward one's group (as opposed to selfishness and disloyalty) may increase the group's survival, its rate of fecundity, and therefore its members' average fitness as compared to other groups. Within the group, individuals who benefit from a reputation related to their dedication and altruistic behavior may be the recipients of reciprocity which extends the chance of their genes' survival. Even if the individual does die for the group, their family with whom they share genes may benefit from their relative's selfless act on the group's behalf (Victoroff, 2009).

Overall then, the quest for personal significance theory proposes that self-sacrifice, and suicide terrorism as its epitome, is the "motivational denominator" (Kruglanski et al., 2009, p. 349) common to seemingly disparate findings reported in the terrorism literature. Additionally, the quest for personal significance's framework is consistent with evolutionary perspectives and affords an understanding of why and when individuals are likely to consider self-sacrifice.

Several theoretical implications proposed by the quest for significance theory have been supported by empirical research. For instance, research from the terror management literature, which posits that death anxiety is the utter threat to one's significance, has repeatedly found that death anxiety increases commitment to cultural worldviews (Greenberg, Solomon, & Pyszczynski, 1997). Similarly, research conducted by Durlak (1972) has documented a negative relationship between purpose in life and death anxiety. Closely related to these findings, identity consolidation theory (McGregor, 1998, 2003) proposes that people facing personal uncertainty may attempt to reduce it by reacting with excessive zeal including having tenacious convictions and being intolerant of dissent for an idealistic cause (McGregor, Gailliot, Vasquez, & Nash, 2007; McGregor & Marigold, 2003; McGregor, Nail, Marigold, & Kang, 2005). Mounting evidence now supports the notion that situations of failure, loss of control, loneliness, and insecurity activate zealous reactions (for a review, see McGregor, 2006). Lastly, consistent with the notion that collectivism and group identity are relevant to the phenomenon of self-sacrifice, Swann and colleagues (Swann, Gomez, Dovidio, Hart, & Jetten, 2010) have documented a significant relationship between individuals' group identity and willingness to self-sacrifice for the sake of the group (i.e., fighting for the group, donating money).

Despite these insightful findings, several implications concerning the quest for personal significance have yet to be tested empirically. For instance, although previous findings have well

documented that significance loss propels individuals to fervently embrace group ideologies, research has yet to document whether potential significance gain can have the same effect. Additionally, it appears that previous research has skirted the topic of self-sacrifice by highlighting the importance of ideological support without addressing whether individuals would also be willing to take an additional step and consider martyrdom in their group's behalf. This gap in knowledge possibly stems from the fact that no psychometric tool to date measures individuals' readiness to self-sacrifice. Another reason is that the topic of self-sacrifice and related issues are very sensitive and collecting data on a population that is willing to die for a cause may be logistically forbidding.

Another question that remains to be clarified is the role of ideology in the act of self-sacrifice. As already mentioned, the quest for personal significance states that ideologies suggest the way of restoring (or improving) one's significance. Potentially, when the quest for personal significance is awakened, self-sacrifice can be guided toward peaceful or destructive actions as a function of the type of ideology that one defends. The role of ideology, however, has thus far been unexplored by the quest for significance theory. Consequently, this dissertation attempts to fill this gap in knowledge by (1) creating a psychometric tool to measure people's readiness to self-sacrifice, (2) testing whether activating the quest for significance increases people's willingness to die for a cause, and (3) investigating whether the specific ideology to which one subscribes determines whether peaceful or destructive ways of supporting one's cause will be engaged in when the quest for personal significance is activated. Research described in the present dissertation was designed to test these hypotheses.

Section 1: Developing a Psychometric Tool of Readiness to Self-Sacrifice

Study 1

The aim of Study 1 was to validate a scale to measure individuals' readiness to self-sacrifice. The scale construction process was theoretically driven and was based on the definition of martyrdom given earlier. This definition entails that self-sacrifice be associated with extreme commitment and positive valuation of the cause that individuals have chosen for themselves. In addition, the self-sacrifice scale should be associated with other motivational constructs associated with elevated goal-commitment; I thus predicted that the self-sacrifice scale should be related to a measure of harmonious and obsessive passion (Vallerand et al., 2003). Lastly, in line with Post and colleagues (Post et al., 2009) who argued that suicide terrorism is not associated with signs of psychopathology, I predicted that self-sacrifice should not be associated with suicidal ideation and depression.

Method

Participants

Seven-hundred and ninety-six participants (339 men, 457 women; M_{age} = 31.48; SD_{age} = 10.61) from Canada and the United States participated in this study. Participants' gender did not yield any effects on the dependent variables; hence it will be omitted from further consideration. Participants completed a questionnaire on Amazon.com's Mechanical Turk online survey program. Mechanical Turk (MTurk) allows researchers to post questionnaires that are completed by users who participate in exchange for small contributions towards an Amazon.com gift voucher. The platform records participants' IP address to prevent them from completing the same questionnaire more than once. Researchers that have compared data from Mechanical Turk vis-à-vis data obtained in university laboratories or elsewhere on the web (e.g., discussion forums) have concluded that (1) MTurk provides more diverse and more representative samples (Buhrmester, Kwang, & Gosling, 2011), (2) "the quality of data provided by MTurk met or

exceeded the psychometric standards associated with published research" (Buhrmester et al., 2011, p. 5) and that (3) MTurk is a "reliable source of experimental data" (Paolacci, Chandler, & Ipeirotis, 2010, p. 416).

Procedure

Participants were invited to participate in a study on personality. After completing the consent form, participants were given a questionnaire including several psychological measures (e.g., self-sacrifice, passion, goal-commitment) detailed below.

Measures

Readiness to Self-Sacrifice. Participants were asked to think about an important cause. They were then asked to list this cause and to complete the items in reference to this cause. The self-sacrifice scale consisted of 39 items (see Appendix A) that I have personally developed to reflect the aforementioned definition of martyrdom. Sample items were "I would defend a cause to which I am truly committed even if my loved ones rejected me" and "I would not risk my life for a highly important cause" (reverse-scored). Participants rated each item on a 7-point scale ranging from 1 (*Not agree at all*) to 7 (*Very strongly agree*).

Passion Scale. While responding to the passion Scale (Vallerand et al., 2003, see Appendix B), participants were asked to keep in mind the cause referred to in the self-sacrifice scale. The passion scale consisted of six harmonious passion items (e.g., "My cause is in harmony with the other activities in my life;" $M = 5.03$, $SD = 1.38$, $\alpha = .87$) and six obsessive passion items (e.g., "I have almost an obsessive feeling for my cause;" $M = 2.77$, $SD = 1.52$, $\alpha = .88$) and was completed on a 7-point Likert scale ranging from 1 (*Not agree at all*) to 7 (*Very strongly agree*).

Commitment to the Cause. Participants' commitment (M = 6.01, SD = 1.28) to their cause was measured with a single item ("My cause is very important to me") on a 7-point scale ranging from 1 (*Not agree at all*) to 7 (*Completely agree*).

Cause Valuation. Participants indicated the extent to which they like (M = 5.98, SD = 1.38) their important cause on a 7-point scale ranging from 1 (*Not at all*) to 7 (*Extremely*).

Depression. The short Patient Health Questionnaire (PHQ, Kroenke, Spitzer, & Williams, 2001, see Appendix C) was utilized to measure participants' tendency to feel depressed. The short PHQ is a 9-item self-report scale (M = 1.70, SD = .65, α = .89) in which participants report the frequency to which they experience different symptoms. Sample items: "Little interest or pleasure in doing things" and "Feeling down, depressed, or hopeless". Participants gave their answers on a 4-point scale ranging from 1 (*Not at all*) to 3 (*Nearly every day*).

Suicidal ideation Scale. Participants' suicidal ideation was measured using the Beck Scale of Suicidal Ideation (BSI; Beck & Steer, 1991, see Appendix D). The BSI is a 19-item self-report scale in which participants rate the severity of each statement on a 3-point scale ranging from 0 to 2. A single score of suicidal ideation was computed by averaging across items (M = 1.25, SD = .25, α = .83).

Results

On Important Causes.

All participants indicated a cause that was important for them. Over 50 different causes were mentioned by participants. The 5 most popular causes in descending order were promoting human rights (30.3%), religion (12.7%), animal rights (11.4%), helping family and friends (10.4%), protecting the environment (7.5%).

On the Factorial Validity and Reliability of the Self-Sacrifice Scale.

To test the factorial validity of the self-sacrifice scale, participants were randomly divided into two groups. A first group was used to derive a preliminary version of the scale by means of an exploratory factor analysis (EFA), and the second group was used to confirm this version of the self-sacrifice scale using a confirmatory factor Analysis (CFA) with AMOS (Arbuckle, 2007). A first exploratory factor analysis was thus conducted with the 39 items using a random sample of 459 participants using Maximum Likelihood and oblimin rotation. Based on this analysis, I eliminated items with cross-loading, as well as those with weak loadings (below .30). Using this approach, ten items (five were reverse-scored) were retained.

A second exploratory factor analysis (with maximum likelihood and oblimin rotation) was then conducted with those 10 items. Results revealed a two-factor solution with eigenvalues of 4.96 and 1.53 representing 45.14% and 11.34% of the variance, respectively. The oblimin factor rotation revealed that all the positive items loaded on one factor and all the reverse-scored items loaded strongly on a second factor (no cross-loadings for any of the items). Results of the oblimin rotation thus appeared to suggest the presence of two factors; however, previous research has shown that loadings of this sort are usually an artifact of common-method factors (Marsh, Scalas, Nagengast, 2010, for a discussion see Biderman, Nguyen, Cunningham, Ghorbani, 2011). Therefore, in line with my theory, I hypothesized that a unique factor structure would best fit the data when adding two common method-factors (one for reverse and one for non-reverse-scored items).

Consequently, a CFA was conducted with AMOS (Arbuckle, 2007) on the 10 self-sacrifice items using the second random group of 337 people. The covariance matrix with the 10 observed variables was used as a database for the measurement model. The specified model was

tested with unstandardized coefficients obtained from the maximum likely method of estimation. It was hypothesized that a single self-sacrifice factor and two method factors would yield a meaningful and coherent fit to the data (see Figure 1). A covariance between the two method-factors was also hypothesized. Results from the CFA yielded a good fit to the data, χ^2 (df = 24, N = 337) = 62.18, p = .001, CFI = .98, IFI = .98, RMSEA = .06. The final self-sacrifice scale is displayed in Appendix E. Results revealed acceptable levels of reliability for the self-sacrifice scale (α = .90).

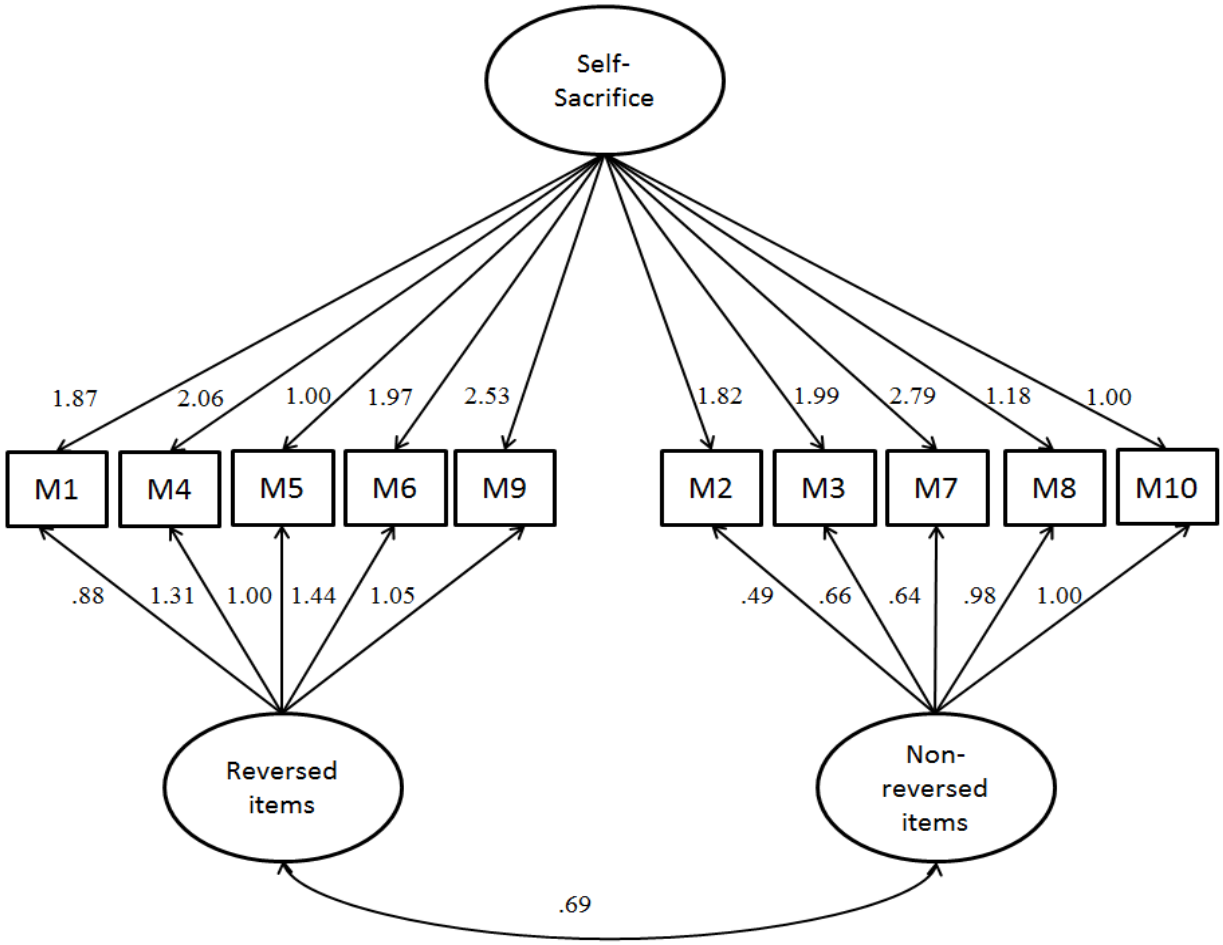


Figure 1. Confirmatory factor analysis of the self-sacrifice scale: A one-factor solution with two method factors (Study 1). All beta coefficients were statistically significant (all *p*s < .05).

To ensure that the proposed unique factor solution with two method factors was the best fitting model, I compared it to three alternative models, namely Model (1) a unique factor model with no method factors, Model (2) a unique factor solution with one positive method factor (composed of non-reverse-scored items), and Model (3) a unique factor solution with one negative method factor (composed of reverse-scored items). A chi-square difference test between Model 1 and the hypothesized model was significant, $\Delta\chi^2$ (11) = 472.82, $p < .01$, suggesting that the hypothesized model best fitted the data. Comparing Model 2 against the hypothesized model yielded similar results, $\Delta\chi^2$ (6) = 48.32, $p < .01$. Similarly, Model 3 fit the data more poorly compared to the hypothesized model, $\Delta\chi^2$ (6) = 173.12, $p < .01$. Table 1 provides a summary of these model comparisons tests.

Table 1

Self-Sacrifice model comparisons.

Models	χ^2	*df*	CFI	RMSEA
Hypothesized	62.18**	24	.98	.06
Model 1	535.00**	35	.75	.20
Model 2	110.50**	30	.96	.08
Model 3	235.30**	30	.89	.14

Note: ** $p < .01$

Relationships with Elements of the Definition of Self-Sacrifice.

Correlational analyses were conducted with the self-sacrifice scale and items assessing elements related to the definition of martyrdom (see Table 2). Results indicated that self-sacrifice was both related to having a harmonious (r (335) = .28, $p < .001$) and obsessive passion (r (335) = .33, $p < .001$) in relation to the cause that participants considered important. Self-sacrifice was also related to commitment to a cause (r (335) = .22, $p < .001$) and valuation of the cause (r (335) = .17, $p < .001$). In addition, results indicated that suicidal intention (r (335) = .05, $p = .34$)

and depression (r (335) = .06, p = .27) were unrelated to self-sacrifice. Similarly, age (r (335) = .00, p = .96) was unrelated to self-sacrifice.

Table 2

Means, standard deviations, and correlations.

	M	SD	2	3	4	5	6	7
Self-Sacrifice (1)	3.69	1.77	.33**	.28**	.22**	.17**	.06	.05
Obsessive passion (2)	2.77	1.52		.47**	.31**	.21**	.18**	.07
Harmonious passion (3)	5.03	1.38			.66**	.65**	-.07	-.07
Commitment (4)	6.01	1.28				.64**	-.04	-.07
Valuation (5)	5.98	1.38					.05	-.06
Depression (6)	1.70	0.65						.54**
Suicide ideation (7)	1.25	0.65						

Note: * $p < .05$, ** $p < .001$

Discussion

Results of Study 1 provided support for a theoretically driven scale measuring individuals' readiness to self-sacrifice. Specifically, Study 1 demonstrated that the self-sacrifice scale is best conceptualized as a one factor solution that includes two method-factors. In addition, the self-sacrifice scale was shown to be psychometrically sound. Aside from being a reliable scale, the self-sacrifice scale demonstrated good convergent validity: It was positively associated with goal-commitment and other motivational constructs associated with extensive goal-commitment (harmonious and obsessive passion). Moreover, the self-sacrifice scale was associated with valuation of the cause. The self-sacrifice scale also demonstrated divergent validity: It did not correlate with depression, and suicidal ideation, which is consistent with the idea that willingness to die for a cause is different from psychopathology (Post et al., 2008).

Study 2

Study 2 was designed to further document the construct validity of self-sacrifice by examining its nomological network. Using two different samples, Study 2 examined the correlates of self-sacrifice with several personality dimensions. In the first sample, the self-sacrifice scale was correlated with the Big Five, in the second sample it was correlated with measures of altruism, optimism, meaning in life, fatalism, and belief in god. No a priori predictions were made with regard to self-sacrifice and the Big Five; this analysis was exploratory. However, several predictions were made in the second sample: (1) Self-sacrifice and altruism were expected to positively correlate because they are both related to self-effacement and acting on behalf of others, (2) self-sacrifice was expected to correlate positively with meaning in life because commitment to an important cause should provide a sense of purpose and guidance (Emmons, 2003), (3) self-sacrifice and belief in god were expected to correlate positively given that the notion of martyrdom is a recurrent theme being sanctioned in the scriptures, (4) self-sacrifice was not expected to be related to wishful thinking and inflated beliefs in the likelihood of experiencing positive or avoiding negative life events (optimism), lastly (5) self-sacrifice was not expected to correlate with fatalism because fatalism is a form of resignation and belief in predeterminism opposed to the idea that putting forth efforts can be useful to help one's cause.

Method

Participants

Five hundred and seven participants from the United States were recruited on Amazon.com's Mechanical Turk. These participants were randomly divided into two

approximately equivalent samples: Sample 1 (N = 250; 80 men, 170 women; M_{age} = 33.09, SD_{age} = 12.84) and Sample 2 (N = 257; 83 men, 174 women; M_{age} = 33.11, SD_{age} = 12.35).

Procedure

As in Study 1, participants were invited to partake in a study on personality. Sample 1 completed the self-sacrifice scale and the Big Five, whereas Sample 2 completed the self-sacrifice scale and a measure of altruism, meaning in life, belief in god, optimism, and fatalism.

Measures

***Readiness to Self-Sacrifice*.** Akin to Study 1, participants listed an important cause and completed the self-sacrifice scale (Sample 1: M = 3.91, SD = 1.34, Sample 2: M = 3.84, SD = 1.40) in reference to this cause (e.g., world peace, gender equality, animal rights). The scale had acceptable reliability (Sample 1: α = .86, Sample 2: α = 87).

Big Five Personality Dimensions. The Big Five (see Appendix F) was measured using the Mini Markers scale (Saucier, 1994). The scale consists of 40 personality adjectives intended to measure participants' openness (e.g., "Imaginative", α = .83), conscientiousness (e.g. "Organized", α = .83), extraversion (e.g., Energetic, α = .87), agreeableness (e.g., "Warm", α = .84), and neuroticism (e.g., "Moody", α = .86). Participants rated the extent to which each adjective accurately described their personality on a 9-point Likert scale ranging from 1 (*Extremely inaccurate*) to 9 (*Extremely accurate*).

Altruism. The extent to which participants are benevolent and devoted to the welfare of others was measured via the Self-Report Altruism scale (Rushton, Chrisjohn, & Fekken, 1981, see Appendix G). In this scale, participants reported the frequency (M = 2.68, SD = .61) with which they engaged in 20 different behaviors on a 5-point Likert scale ranging from 1 (*Never*) to

5(*Very often*). Sample items: “I have given directions to a stranger.” and “I have donated blood” (α = .89).

Meaning in Life. Participants’ completed the Meaning in Life scale (Steger, Frazier, Oishi, & Kaler, 2006, see Appendix H), a 5-item instrument measuring the presence of meaning in life (*M* = 4.73 *SD* = 1.45, e.g., “I have a good sense of what makes my life meaningful”). Items were rated on a 7-point Likert scale ranging from 1 (*Absolutely untrue*) to 7 (*Absolutely true*). The scale displayed good reliability (α = .93).

Belief in God. Participants were asked whether they believe or not (Yes/No) in God (*M* = .70, *SD* = .45).

Optimism. The Life Orientation Test (Scheier & Carver, 1985, see Appendix I) measured participants’ dispositional optimism (*M* = 3.27 *SD* = .81). The scale is composed of eight items such as "In uncertain times, I usually expect the best" and “If something can go wrong for me, it will” (α = .89). Respondents indicate their agreement with each item on a 5-point scale ranging from strongly 1 (*Strongly disagree*) to 5 (*Strongly agree*).

Fatalism. The belief that all events are predetermined and inevitable was measured using the fatalism scale (Aycan et al., 2000, see Appendix J). The fatalism scale (*M* = 2.36, *SD* = 1.05) is composed of 5 items such as “Most of the time, it doesn't pay to try hard because things never turn out right anyway” and “When bad things are going to happen they just are going to happen no matter what you do to stop them”. Participants indicated to what extent they agree with these statements on a 7-point scale ranging from 1(*Not agree at all*) to 7 (*Very strongly agree*). The scale was reliable (α = .73).

Results

The first set of analyses involved Sample 1 and examined the relationship between self-sacrifice and the Big Five. Correlational analyses indicated that self-sacrifice was unrelated to all five personality dimensions. Conscientiousness was negatively related to self-sacrifice r (248) = -.10, p = .09, however, only marginally. Table 3 summarizes the results.

Table 3

Means, standard deviations, and correlations.

	M	SD	2	3	4	5	6
Self-Sacrifice (1)	3.91	1.34	.09	-.10	-.03	-.05	-.09
Openness (2)	6.89	1.22		.21**	.01*	.33**	.07
Conscientiousness (3)	6.39	1.30			.28**	.39**	.47**
Extraversion (4)	5.07	1.63				.20**	.29**
Agreeableness (5)	6.93	1.23					.38**
Neuroticism (6)	5.53	1.30					

Note: * $p < .05$, ** $p < .001$

The second set of correlational analyses involved Sample 2. In line my expectation, results indicated that self-sacrifice was positively related to altruism r (255) = .20, $p < .001$, meaning in life, r (255) = .22, $p < .001$, and belief in god, r (255) = .13, $p < .05$. Also consistent with my predictions, self-sacrifice was unrelated to optimism, r (255) = .20, p = .22, and fatalism, r (255) = .00, p = .89. Table 4 summarizes the results.

Table 4

Means, standard deviations, and correlations.

	M	SD	2	3	4	5	6
Self-Sacrifice (1)	3.90	1.38	.20**	.07	.22**	.00	.13*
Altruism (2)	3.69	1.29		.26**	.17*	.02	.08
Optimism (3)	6.28	.98			.56**	-.25**	.06
Meaning in Life (4)	6.28	1.16				-.24**	.14*
Fatalism (5)	2.36	1.05					.03
Belief in God (6)	.70	.45					

Note: * $p < .05$, ** $p < .001$

Discussion

Study 2 provided further evidence for the construct validity of self-sacrifice. Specifically, Study 2 explored in greater depth the nomological network of this construct by evincing its correlates with several psychological dimensions. In the first sample, the self-sacrifice scale was found to be unrelated to the Big Five personality dimensions. These exploratory findings suggest on the one hand that self-sacrifice is a construct distinct from the five broad dimensions of personality. On the other hand, it also suggests that there is no specific personality profile that predisposes one to self-sacrifice for a cause.

In the second sample, results indicated that self-sacrifice was positively correlated with altruism, meaning in life, and belief in god. These results coincide with how martyrs are generally conceived: Individuals acting on behalf of the group for a meaningful cause often derived from religious beliefs. Lastly, the fact that self-sacrifice was unrelated to optimism and fatalism suggests that self-sacrifice is not related to cognitive distortions about the likelihood of

positive or negative events. In summary, the results of Study 2 support the present conceptualization of martyrdom and the validity of the self-sacrifice scale.

Study 3

The main purpose of Study 3 was to document the test-retest reliability of the self-sacrifice scale. Consistent with the notion that self-sacrifice is positively related to goal-commitment and positive attitudes toward a cause (Study 1), I predicted that the readiness to self-sacrifice is a relatively stable individual characteristic. Indeed, it would be unexpected to observe a sudden change in people's beliefs, including their readiness to self-sacrifice, for a cause that they cherish. In addition to testing the temporal stability of the self-sacrifice scale, Study 2 aimed to test its ability to predict future outcomes such as people's commitment to their cause and how disappointed they would feel if their cause did not progress sufficiently. I hypothesized that self-sacrifice (measured at Time 1) would predict people's commitment to their cause and their disappointment if their cause was to fail (at Time 2).

Method

Participants

One hundred and thirty eight psychology undergraduate students (36 men, 102 women; M_{age} = 19.77, SD_{age} = 4.42) were recruited for this study.

Procedure

Introductory psychology students completed the self-sacrifice scale in a mass testing session at the beginning of the semester. They were invited to a lab session approximately 8-10 weeks later and completed the self-sacrifice scale once again, in addition to other measures.

Measures

Readiness to Self-Sacrifice. Akin to Studies 1 and 2, participants were asked to list an important cause and completed the self-sacrifice scale in reference to this cause (e.g., cure cancer, ending poverty, animal rights). The scale had acceptable reliability at Time 1 (M = 3.90, SD = 1.38, α = .89) and Time 2 (M = 3.69, SD = 1.29, α = .86).

Commitment to the Cause. At Time 2, participants' commitment (M = 6.28, SD = .98) to their cause was measured with a single item ("My cause is very important to me") on a 7-point scale ranging from 1 (*Not agree at all*) to 7 (*Completely agree*).

Disappointment. At Time 2, participants indicated "How disappointed would you feel if your cause did not come to a happy ending?" (M = 6.28, SD = 1.16) on a 7-point scale ranging from 1 (*Not disappointed at all*) to 7 (*Completely disappointed*).

Results

The cross-temporal stability of self-sacrifice at Time 1 and Time 2 was estimated using correlational analyses; results indicated that both measures were highly correlated, r (136) = .66, p = .001. Self-sacrifice at Time 1 was also correlated with commitment to the cause and disappointment (both measured at Time 2). Results for these analyses yielded the predicted pattern of results: Self-sacrifice predicted people's commitment, r (136) = .21, p = .01, and disappointment if their cause was to fail, r (136) = .18, p = .02, several weeks in advance. The results of these analyses are summarized in Table 5.

Table 5

Means, standard deviations, and correlations.

	M	SD	2	3	4
Self-Sacrifice Time 1 (1)	3.90	1.38	.66**	.28*	.22*
Self-Sacrifice Time 2 (2)	3.69	1.29		.17*	.16†
Commitment (3)	6.28	.98			.14†
Disappointment (4)	6.28	1.16			

Note: † marginally significant, * $p < .05$, ** $p < .001$

Discussion

Results of Study 3 provided an additional piece of evidence with regard to the psychometric properties of the self-sacrifice scale. In line with my expectations, Study 3 evinced that participants' readiness to self-sacrifice at Time 1 predicted at Time 2 (1) their readiness to self-sacrifice, (2) their commitment to the cause, and (3) their disappointment if their cause did not materialize. Thus, present results support the contention that the readiness to self-sacrifice is a stable individual characteristic with predictive validity for future outcomes related to the cause people deem important to defend.

Study 4

The aim of Study 4 was to provide further empirical support for the construct validity of the self-sacrifice scale using the know-groups method. This method consists of comparing groups that are theoretically known to be different on a criterion variable; if the test is valid than one would expect the groups to statistically differ from one another (Hattie & Cooksey, 1984). To goal of Study 4 was to compare environmentalists to non-environmentalists. I predicted that environmentalists for whom preserving the natural environment is pivotal should report greater readiness to self-sacrifice to protect the environment than non-environmentalists.

Method

Participants

One hundred and twenty-six participants (75 men, 51 women; M_{age} = 27.48, SD_{age} = 8.20) were recruited on Amazon.com's Mechanical Turk.

Procedure

Participants were invited to partake in a study on "people's personal causes". Participants were asked to list a cause that was important to them and then proceeded to complete the self-sacrifice scale. Lastly, participants completed several demographic questions and were then debriefed.

Measures

Readiness to Self-Sacrifice. Participants' readiness to self-sacrifice was measured with the self-sacrifice scale (M = 2.90, SD = 1.16) which was adapted to the cause of "protecting the environment" (e.g., "I would be ready to give my life to protect the environment"). The scale had acceptable reliability (α = .87).

Results

Two groups were created based on the cause that participants listed. Participants that listed a cause related to protecting the environment were classified as belonging in the environmentalist groups (N = 34) and all other participants were assigned to the non-environmentalist group (N = 92). In line with my predictions, an ANOVA indicated that the environmentalist group reported greater readiness to self-sacrifice to protect the environment than the non-environmentalist group, F (1, 124) = 7.63, p = .007, η_p^2 = .05.

Discussion

The focus of Study 4 was to further document the validity of the self-sacrifice scale using the known-group technique. As expected, environmentalists for whom protecting the environmental is important exhibited significantly higher scores on the self-sacrifice scale (adapted to protecting the environment) than the non-environmentalists who did not share similar interests. These findings demonstrate the ability of the self-sacrifice scale to discriminate between groups of people for whom a difference in dispositional readiness to self-sacrifice is assumed to exist.

Study 5

The goal of Study 5 was to provide further evidence for the predictive validity of the self-sacrifice scale. Consistent with the definition of martyrdom, the self-sacrifice scale should predict extreme forms of behavior. By extreme, I refer to non-normative behavior (e.g., joining radical groups, engaging in violent actions). I predicted that individuals willing to die for a cause would be more likely to conceive that all means to their end are justifiable. Lastly, because of the strong attachment and dedication to their cause, individuals with high levels of self-sacrifice should treat with animosity those that do not respect their cause. I subjected the foregoing hypotheses to empirical scrutiny.

Method

Participants

Seventy-six students (48 men, 28 women; M_{age} = 31.00, SD_{age} = 11.77) were recruited on Amazon.com's Mechanical Turk. The study explicitly recruited individuals for whom protecting the environment is an important cause. Participants' gender did not yield any effects on the dependent variables; hence it will be omitted from further consideration.

Procedure

Participants were invited to participate in a study on "attitudes regarding the environment". After completing the consent form, participants were given a questionnaire including several psychological measures described below.

Measures

Readiness to Self-Sacrifice. Akin to Study 4, participants' readiness to self-sacrifice was measured with the self-sacrifice scale adapted to "protecting the environment. The scale had acceptable reliability (M = 3.43, SD = 1.30, α = .90).

Willingness to engage in Extreme means. Participants were presented with a list of environmental actions and some filler items. They were then asked to rate the extent to which they would be willing to engage in these actions to save the environment. Participants gave their ratings on a 7-point scale ranging from 1 (*Not agree at all*) to 7 (*Extremely agree*). Five of the means presented were violent and non-normative actions. Specifically, these items were "I would be willing to" (1) Join a radical activist group to do risky or illegal actions in order to help the environmental cause, (2) Form a radical group to crack down on polluting businesses, (3) Use any means, even violent ones, to help the environmental cause, (4) Commit acts of sabotage against installations that harm the environment, and (5) Physically attacking a polluting, factory's representative. These items were highly interrelated (M = 2.50, SD = 1.34, α = .86) and were thus averaged.

Attitudes toward Individuals who do not respect the environment. Participants' attitudes toward people who do not respect the environment were measured on a 7-point scale ranging from 1 (*Not agree at All*) to 7 (*Very Strongly agree*). Participants were asked to what extent they would be "angry at them" and "hate them". Because the latter two items were correlated (r (75) =

.47, $p < .001$), a composite score of *anger* was computed by averaging these two items. On a similar scale, I measured the extent to which participants would "forgive" and "feel sorry" for people that do not respect the environment.

Results

Multiple regression analyses were conducted to assess the relationship between self-sacrifice and the willingness to engage in extreme environmental means. Results indicated that greater readiness to self-sacrifice was associated with greater willingness to engage in extreme means ($\beta = .35$, $p = .002$, $R^2 = .11$).

Results also indicated that self-sacrifice was positively associated with feeling angry toward people that do not respect the environment ($\beta = .29$, $p = .009$, $R^2 = .07$) and feeling sorry for them ($\beta = .44$, $p < .001$, $R^2 = .19$). In addition, results demonstrated that self-sacrifice was negatively related to forgiving individuals that do not respect the environment ($\beta = -.22$, $p = .05$, $R^2 = .03$).

Discussion

Results from Study 5 provided further support for the construct validity of the self-sacrifice scale. In keeping with the theoretical definition of martyrdom, it was found that the greater one's readiness to self-sacrifice in order to protect the environment, the greater one's disposition to engage in extreme means to achieve this goal. Importantly, these extreme means were not only contrary to norms, but often associated with violence (e.g., sabotage, physical attacks). This is in line with the common adage that "the end justifies the means", which is commonly interpreted to say that if a goal is important enough, then all means serving that goal are justified, even if they are detrimental to the attainment of alternative goal-pursuits. Beyond these findings, Study 5 evinced that self-sacrifice has further social implications. Indeed, Study 5

demonstrated a positive association between readiness to self-sacrifice and animosity toward people holding different ideological beliefs. These results resonate with classic findings on ingroup and outgroup dynamics (e.g., ingroup/outgroup biases, Tajfel & Turner, 1979). More importantly, however, these results demonstrate that even ideologies that appear peaceful on the surface (i.e., saving the environment) can be conducive to aggressiveness when pursued too vigorously.

Study 6

The aim of Study 6 was to provide further evidence for the predictive validity of the self-sacrifice scale. Undoubtedly, the act of self-sacrifice entails costly consequences (e.g., giving away one's possessions, losing one's life) which can be expected to weight into one's judgment. If the cost is considerable, then individuals may hesitate and even reconsider whether self-sacrifice is an option. However, individuals' readiness to self-sacrifice should attenuate this hesitancy and accelerate the speed at which they decide to make an act of self-sacrifice. Study 6 aimed to document this phenomenon by investigating how quickly individuals pull the trigger to "blow themselves up" as a function of their disposition to self-sacrifice.

Method

Participants

One-hundred and fifty-five (101 men, 54 women; M_{age} = 19.71, SD_{age} = 2.13) undergraduate students were recruited in exchange for course credits. Participants' gender did not yield any effects on the dependent variables; hence it will be omitted from further consideration.

Procedure

Upon arrival at the lab, participants were ushered to a private room. Participants then completed the self-sacrifice scale along with a series of filler scales to disguise the true purpose of the experiment. Then, participants were led to a different room to play a computer videogame named “War of the Worlds”. To play the game, participants were given a joystick and instructions on the screen explained how to use the buttons on the device. In the science-fiction game, participants played the role of a space traveler aboard a spaceship exploring the solar system. Following a blast of noise, their character discovered that the spaceship was invaded by Aliens and that other crew members had disappeared. Their character realized that it was absolutely certain that “if the Alien threat is not neutralized now, they will invade Earth and humanity will be exterminated.” The only weapon available to neutralize the threat was a bomb-belt and its detonator. Participants were then told that their objective was to neutralize the Alien threat by detonating the bomb attached to them, at the right time. In doing so, participants were told that they would kill the Aliens and save humanity, however they would also blow themselves up and die in the process. Participants were told that they would explore the spaceship and be presented with several images. They were instructed to press the joystick’s trigger when presented with the image of an Alien and holster their bomb using a different button when presented with the image of a neutral object. All images were presented before the task began so that participants could familiarize themselves with them. In addition, participants were told that they would be given only one chance to activate their bomb and that they would need to act as fast and as accurately as possible to sacrifice their life and to accomplish their mission.

During the task, four neutral images (a chair, a computer, a lamp, and a table) and one target image (Alien) were presented to participants. The stimuli appeared in the same order for

all participants and the fifth image was the target stimulus. Before each image, a message appeared in the middle of the screen asking participants to "get ready". Reaction times to all stimuli were measured in milliseconds. A funneled debriefing procedure (Chartrand & Bargh, 1996) was used to assess whether participants had guessed the nature of the study; in fact, no participants guessed the purpose of the experiment.

Measures

Readiness to Self-Sacrifice. Akin to Studies 1 and 2, the self-sacrifice scale was used to measure participants' readiness to self-sacrifice (α = .69).

Results

Data were analyzed using hierarchical linear modeling (HLM) with HLM 6.0 (Raudenbush, Bryk, & Congdon, 2004) given that the present study involved a hierarchically structured data set where reaction times are nested under participants' dispositional measure (i.e., self-sacrifice). HLM accounts for the shared variance due to multiple observations within the same participant. Therefore, the parameter estimates generated from HLM (particularly the standard errors) are less biased than are those generated from ANOVA when the data are nested within participants. The following HLM analyses were conducted with the restricted maximum likelihood method of estimation. Incorrect responses during the videogame (3.4% of all responses) were removed because their interpretation would be ambiguous (see Bargh, Chaiken, Govender, & Pratto, 1992; Fazio, 1990).

HLM analyses were conducted to predict reaction times from individuals' readiness to self-sacrifice (between-person factor), the category of image presented (within-person factor) and their interaction. Accordingly, image category was dummy coded with a score of 1 assigned to reaction times associated with the alien target and a score of 0 assigned to reaction times

associated with neutral images. Following Aiken and West's procedure (1991) all predictors were mean centered. Unstandardized coefficients are reported. Because the reaction task did not include any practice session, reaction time to the first neutral stimuli (table) was considered a practice trial for everyone and was not included in the present statistical analysis.

Results (see Table 6) indicated that self-sacrifice did not influence reaction times (B = 16.74, p = .25). In addition, results indicated an effect of image category on reaction times (B = -72.36, p = .03). Specifically, reaction times were shown to be faster for the Alien image than for the neutral objects. More importantly, results revealed that the within-person relationship between image category and reaction times was moderated by self-sacrifice (B = -40.03, p = .04). The overall model explained 1.4% of the variance.

Table 6

Results of the HLM analysis predicting reaction times from self-sacrifice and image category.

	Coefficient	*t*-ratio	*p*-value
Self-Sacrifice	16.74	1.15	.25
Image Category	-72.36	-2.17	.03
Self-Sacrifice × Image Category	-40.03	-2.03	.04

Follow-up simple slope tests (Aiken & West, 1991) for the "self-sacrifice × image category" interaction showed that individuals with high levels of self-sacrifice (i.e., one standard deviation unit above the mean), pressed the joystick's trigger faster when exposed to the Alien image than when exposed to neutral objects (B = -112.39, t = -3.35, p = .00). In contrast, for individuals who were low (i.e., one standard deviation unit below the mean) on self-sacrifice, reaction times to the Alien image did not differ from their reaction times to the neutral images (B = -32.32, t = 0.74, p = .45). In sum, the present results demonstrate that people's disposition

toward self-sacrifice reduces their hesitation to self-sacrifice for a given goal. Figure 2 illustrates the pattern of results.

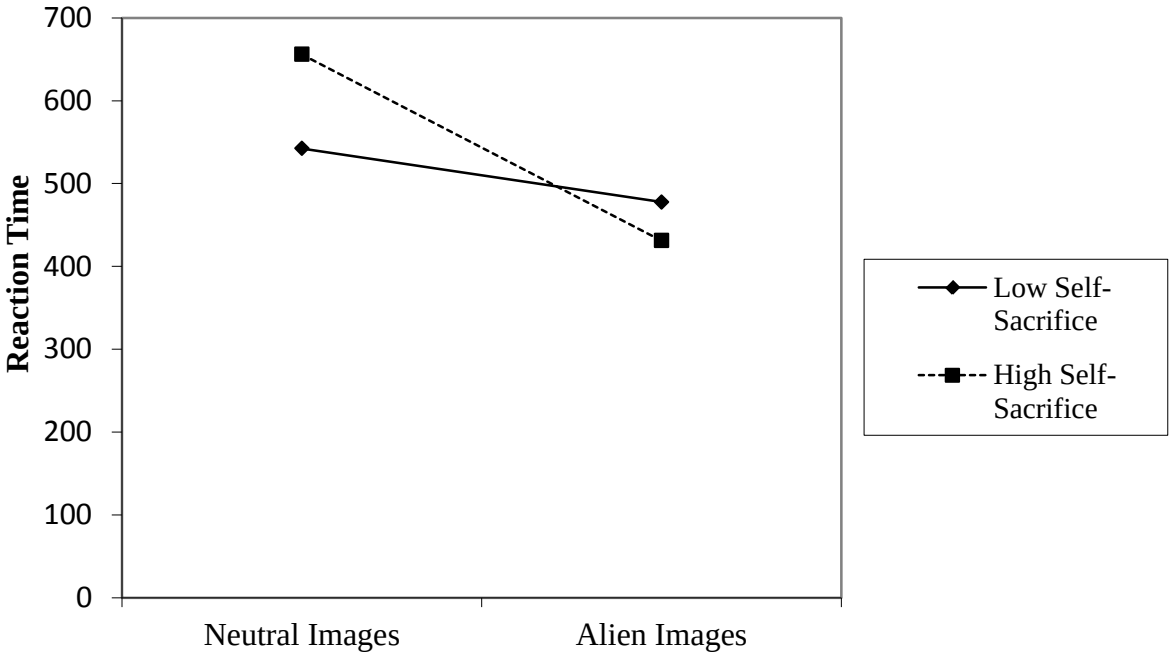


Figure 2. Reaction times for detonating or holstering the bomb-belt as a function of image category and participants' disposition toward self-sacrifice (Study 6).

Discussion

The present results provide additional support for the predictive validity of the self-sacrifice scale. Specifically, these results demonstrate that greater readiness to self-sacrifice reduces one's hesitation to engage in self-sacrificial behavior. In the present study, individuals "blew themselves up" more rapidly as a function of their readiness to self-sacrifice. These reactions were spontaneous and probably occurred too rapidly to be modulated by conscious thinking. Interestingly, readiness to self-sacrifice did not decrease reaction times indiscriminately: Facilitation effects occurred only when individuals were presented with the target picture (as opposed to a neutral image). This rules out the alternative explanation that

individuals with high levels of readiness to self-sacrifice are trigger-happy, or simply have better reflexes.

Study 7

So far, I have accumulated evidence that the self-sacrifice scale is a reliable psychometric tool with discriminant and convergent validity (Studies 1-4). In addition, I have evinced that it correlates positively with individuals' willingness to engage in extreme behavior and animosity toward outgroup members (Study 5) and negatively with hesitancy to self-sacrifice (Study 6). One could argue that the latter studies have been devoid of actual cost. In others words, the previous studies haven't addressed head on whether the self-sacrifice scale actually predicts "true" self-sacrificial behaviors. Study 7 thus aimed to address this critique by investigating the relationship between the self-sacrifice scale and individuals' willingness to endure pain, which involves a cost to well-being. I predicted that individuals would be willing to (1) undergo greater pain (2) for a longer period of time as a function of their readiness to self-sacrifice to support a personal cause.

Method

Participants

One hundred and nineteen undergraduate students (39 men, 80 women; M_{age} = 20.61, SD_{age} = 3.11) were recruited for a study on attitudes. Participants were given $5 for their participation.

Procedure

Upon arrival at the lab, participants were ushered to a private room. Participants were told that they would participate in two unrelated studies. In the first study, participants were given a questionnaire packet that included the self-sacrifice scale, demographics, and several

filler scales included in order to disguise the true purpose of the study. Once completed, the experimenter collected the questionnaire and told the participants that they could participate in a second study. The experimenter made sure that the participants understood that the second study was completely voluntary and that it wouldn't affect whether they would receive their payment. The experimenter went on to explain that the second experiment was a study on pain, in which the main focus was to measure how much pain individuals can tolerate. Participants were told that pain would be inflicted via teaspoons of hot sauce (Tabasco^{TM} sauce). Lastly, participants were told that because they would engage in the second study on a purely voluntary basis, the experimenter would give $1 to a charity supporting the cause they wrote down earlier *for each teaspoon* of hot sauce they would eat. If participants decided not to engage in the second study they were thanked and fully debriefed; if they decided to participate, the experimenter brought three bottles of tabasco sauce, a beaker, and a plastic spoon. Participated were instructed that they could stop anytime or continue indefinitely if they wanted to. Between each teaspoon, participants completed a measure of pain and were asked if they wanted to continue or stop the pain study. Additionally, the experimenter updated on the computer screen how many teaspoons of hot sauce had been administered. Each teaspoon contained 3 ml of hot sauce. Once participants decided to stop the pain study, the experimenter jotted down which organization to give the money to.

Measures

***Readiness to Self-Sacrifice*.** Akin to Studies 1 and 2, the self-sacrifice scale (M = 3.92, SD = 1.26) measured participants' readiness to self-sacrifice (α = .85). Participants mentioned supporting causes such as "animal rights", "helping abused children", and "world hunger".

Pain Scale. Participants' pain was measured after each teaspoon of hot sauce using the Wong-Baker Pain Scale (Wong & Baker, 1988, see Appendix K). Participants indicated how much pain they felt by circling the appropriate face (M = 4.65, SD = 2.99). The scale ranged from 0 (*No pain*) to 10 (*Worst pain*).

Teaspoons. The number of teaspoons (M = 3.64, SD = 4.56) taken by participants during the pain study varied between 0 and 30.

Results

Multiple Regression analyses were conducted to assess the influence of self-sacrifice on the number of teaspoons taken by participants to support an important cause of their choice. Results indicated that self-sacrifice significantly predicted the number of teaspoons taken during the pain study (B = .64, t (117) = 1.97, p = .05, R^2 = .02). Figure 3 displays the results.

Figure 3. Number of teaspoons of hot sauce taken to support an important cause as a function of participants' disposition toward self-sacrifice (Study 7).

In addition, readiness to self-sacrifice was regressed on the last reported pain assessment during the pain study. Results indicated that the greater one's readiness to self-sacrifice, the greater the perceived pain before stopping the experiment (B = .43, t (117) = 2.03, $p < .05$, R^2 = .02). Gender did impact the amount of hot sauce participants ate and the pain experienced at the last tea spoon of hot sauce. Specifically it was found that men (M = 5.87, SD = 6.33) ate more hot sauce than women (M = 2.55, SD = 2.50), F (117) = 15.61, p = .001, η_p^2 = .11 and that men (M = 5.33, SD = 2.64), F (117) = 3.02, p = .08 also reported more pain than women (M = 4.32, SD = 3.10), F (117) = 3.02, p = .08, η_p^2 = .02 (marginally significant). However, results previously described remained statistically significant when controlling for gender differences.

Discussion

Results of Study 7 confirmed that the self-sacrifice scale can predict altruistic behavior associated with a cost. Specifically, it was found that the greater one's readiness to self-sacrifice the greater one's disposition to endure pain to support an important personal cause. This was shown in two ways. First, self-sacrifice predicted the number of teaspoons of hot sauce that participants consumed in order to donate money to a charity related to their cause. Second, self-sacrifice predicted the amount of pain participants experienced before quitting the pain experiment. Consequently, Study 7 addressed the limitations of prior studies by demonstrating that individuals are actually willing to go through a painful effort to support an important cause.

Section 2: Understanding the Motivational Determinants of Self-Sacrifice: The Quest for Significance

Study 8

The aim of Study 8 was to provide evidence for the quest for personal significance theory (Kruglanski et al., 2009) which posits that feeling insignificant (the opposite of "being

someone", "to matter") activates the goal of restoring significance. One means postulated to be instrumental to regaining significance is defending an ideology endorsed by one's society. By supporting a cause to which a group subscribes, people are more likely to feel connected to their collectivity, identify with it, and desire to become a part of it. It is through this identification process that people develop a sense of purpose and a sense of importance. Admittedly, the latter idea is not unique to the quest for significance theory; several social psychological theories have made similar claims. For instance, social identity theory (Tajfel & Turner, 1979) posits that through group membership, individuals develop a social identity imbued with pride and self-esteem which also provides a sense of belonging to the social world. In the same vein, terror management theory has provided profuse evidence that individuals reminded of their own mortality (in present interpretation, the ultimate source of insignificance) defend with great fervor their cultural worldviews (Greenberg, Pyszczynski, Solomon, Chatel, 1992). What hasn't been explored, however, is the idea that a loss of self-significance, however induced, will potentiate the readiness to endorse one's group's ideology and defend it at the risk of life and limb.

Building on these notions, Study 8 tested the hypothesis that, once activated, the quest for personal significance would increase people's readiness to self-sacrifice for an ideology. In addition, Study 8 sought to explore the ramifications associated with relinquishing personal benefits and forfeiting things of high value (e.g., personal wealth, pleasure, one's life) for the sake of a cause. Similar to Study 5, in which ideological commitment was shown to render extreme means justifiable, I hypothesized that readiness to self-sacrifice would be positively related to the use of violent means to defend one's ideological convictions. Consequently, I predicted a mediation model wherein the quest for personal significance enhances people's

readiness to self-sacrifice, which in turn increases people's propensity to use violent means to support their cause.

Rather than using a convenience sample (as in Studies 1-7), Study 8 included a group of incarcerated terrorists. The purpose of using this sample was to increase the generalizability and the pertinence of our findings to real-world phenomena. The sample was composed of Tamil Tigers (Liberation Tigers of Tamil Eelam, or LTTE), an organization associated with terrorism[1], war crimes, and the use of suicide belts. Historically, the ideology of the Tamil Tigers has primarily focused on creating a separate Tamil state in the Northern part of Sri Lanka. To take into account this cultural difference, the concept of support for violent means was operationalized as Tamil Tigers' willingness to take arms to create a separate Tamil State.

Method

Participants

Two-hundred and forty-one individuals (all men; M_{age} = 32.64, SD_{age} = 6.33) associated with the LTTE were recruited for this study. These individuals were detained in Sri Lanka, in the region of Boosa. These individuals had been flagged as the most hardcore members of the LTTE responsible for the killing, torturing, and kidnapping of numerous Sinhalese politicians, military figures and others. Additionally, these individuals had lied regarding their involvement with the LTTE, and tried to hide in the local population to avoid prosecution. Notwithstanding these severe crimes, these individuals were part of a deradicalization program spearheaded by the government of Sri Lanka. The goal of the deradicalization program was to provide vocational

[1] The LTTE has been identified as a terrorist organization by 32 countries including the U.S., Canada and other Western nations. It is an organization credited with invention of the suicide belt, assassinations of numerous politicians, military figures and journalists, as well as perpetrating the largest number of suicidal attacks of any terrorist organization.

education, counseling, and spiritual guidance to its beneficiaries with the long term objective of reintegrating them to society.

Procedure

The survey was first introduced verbally by one of the researchers who read a script in the Tamil language. The script mentioned that the goal of the survey was to get to know the thoughts and beliefs of the detainees on various topics. The script also made it clear that the survey was independent of governmental agencies or prison authorities, and that no benefit or penalty would result from their participation (or possible refusal to participate). The detainees signed a standard consent form informing them that their responses would be anonymous and aggregated for statistical purposes and that they could quit at any time without penalty. Detainees were handed a questionnaire packet and a pen (which was theirs to keep upon completion of the questionnaire) and were asked to respond to the questionnaire on their own. The research team stayed in the periphery to answer any questions that may have arisen, while a small group of (unarmed) military and civilians (rehabilitation staff) stayed in the outer periphery to supervise the process. Data collection proceeded without glitches, concerns, or resistance (i.e., all prisoners accepted to complete the survey).

Measure

Personal Insignificance. Personal insignificance (M = 1.49, SD = .86) was measured by asking how often participants are experiencing the following feelings: (1) feeling small, (2) feeling worthless, and (3) feeling hopeless. Participants were asked to respond to these items on a 5-point Likert scale ranging from 1 (*Rarely or never*) to 5 (*Very often*). These three items were highly correlated and were thus average into a single score of personal insignificance (α = .73).

Readiness to Self-Sacrifice. Akin to all previous studies, the self-sacrifice scale (M = 2.97, SD = 1.20) was used to measure participants' readiness to self-sacrifice (α = .68). The scale was translated into the Tamil language using the back translation technique.

Support for Armed Struggle. Tamil Tigers' personal disposition to take arms and impose through force a Tamil state was measured via a 28-item scale (M = 1.98, SD = .74, α = .87, see Appendix L). Sample items: "Fighting is the only way to get a separate state", "Armed fight is a personal obligation of all Tamils today", and "I would support a call for an armed struggle". Participants gave their answers on a 7-point Likert scale ranging from 1 (*Strongly disagree*) to 7 (*Strongly agree*).

Months of Detention. Participants indicated the number of months they had been taking part in the deradicalization program (M = 34.74, SD = 5.84). This measure served as a control variable; presumably, the greater the time spent in this program, the lesser the support for armed struggled (assuming that the deradicalization program is indeed effective).

Results

Mediation analyses were tested using the bootstrapping method with bias-corrected confidence estimates (MacKinnon, Lockwood, & Williams, 2004; Preacher & Hayes, 2004). In the present study, the 95% confidence interval of the indirect effects was obtained with 5000 bootstrap resamples (Preacher & Hayes, 2008). Results indicated that insignificance was positively related to self-sacrifice (B = .34, $t(239) = 3.93$, $p < .05$) and positively related to support for armed struggle (B = .43, $t(239) = 8.98$, $p < .05$), whereas self-sacrifice was positively associated with support for armed struggle (B = .14, $t(239) = 4.27$, $p < .05$). Results of the mediation analyses confirmed the mediating role of readiness to self-sacrifice in the relation between personal insignificance and support for armed struggle (β = .05; CI = .02 to .08). In

addition, results indicated that the direct effect of personal insignificance on support for armed struggle remained significant (β = .38, t (239) = 7.95, p = .001) when controlling for readiness to self-sacrifice, thus suggesting partial mediation. A summary of the descriptive statistics and zero-order correlations between the variables are given in Table 7 and Figure 4 displays the results. I re-ran the model controlling for months of detention; the paths displayed in Figure 4 remained significant and largely unchanged.

Table 7

Means, standard deviations, and correlations.

	M	SD	2	3	4
Personal Insignificance (1)	1.49	.86	.24**	.49**	.06
Self-Sacrifice (2)	2.97	1.20		.34**	.05
Support for Armed Struggle (3)	1.98	.74			.12†
Months in Detention (4)	34.74	5.84			

Note: † marginally significant, * p < .05, ** p < .001

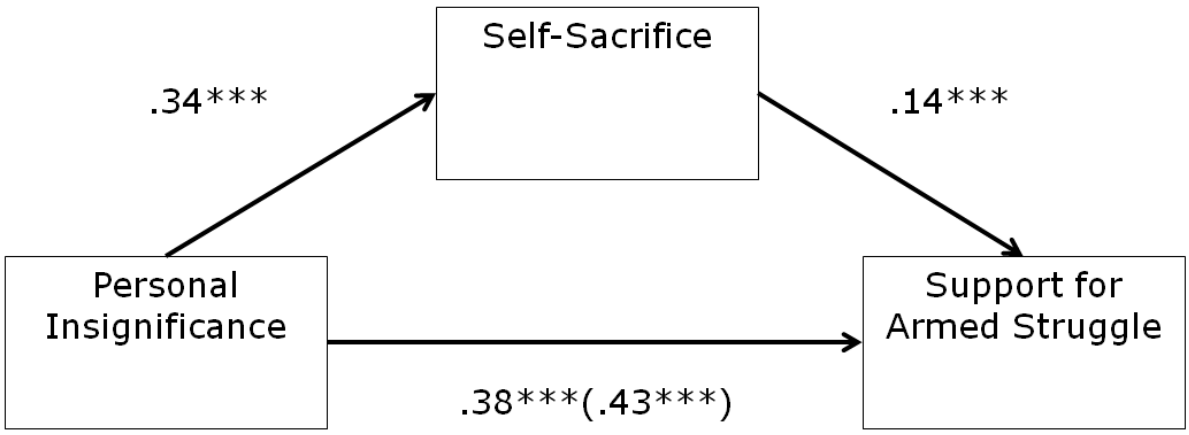


Figure 4. Indirect effect of personal insignificance on support for violence through self-sacrifice (Study 8; N = 241). *** p < .001

Discussion

Results of Study 8 provided support for the quest for significance theory by demonstrating that personal insignificance intensified people's readiness to self-sacrifice for a cause. These results conceptually replicate findings from the terror management literature (Greenberg et al., 1992) whereby mortality salience (a form of significance lost) motivates cultural worldview defense. Additionally, Study 8 replicated the results of Study 5 by demonstrating that people's readiness to self-sacrifice was positively related to support for armed struggle, which suggests that ideological devotion can promote the use of violent means. Put together, Study 8 illustrates the process through which the quest for personal significance can lead to extreme and violent behaviors.

It is not to say, however, that all forms of ideological commitment necessarily lead to the use of violent means. These are probably dictated by the ideology itself, especially in the case of the Tamil Tigers and their experience with warfare. However, it is important to note that despite the LTTE's prior involvement in warfare, Tamil Tigers' support for armed struggle was relatively low (M = 1.49, SD = .86). Considering that these inmates have been part of a deradicalization program for an extensive period of time (M = 34.64 months, SD = 5.77), one possible explanation for these findings is that the program has been effective in reducing their disposition toward violence. Notwithstanding this observation, personal insignificance and self-sacrifice were still important predictors of support for armed struggle.

Overall, Study 8 provides support for the hypothesis that feeling insignificant can be a potent catalyst for violence because of its influence on people's readiness to self-sacrifice. In the case of the Tamil Tigers, violent means included taking arms and conducting suicide bombings

to achieve an independent Tamil state. Thus, the present findings resonate well with real-world phenomena such as modern political conflicts commonly plagued with violent atrocities.

Study 9

The objective of Study 9 was to offer a conceptual replication of Study 8 with a stronger methodology as it could be argued that the correlational nature of Study 8 represents an important methodological limitation. To address this issue, Study 9 aimed to manipulate the activation of the quest for significance by frustrating participants' belongingness goal. In their review on the need to belong research, Baumeister and Leary (1995) argued that forming and maintaining social bonds is a fundamental human motivation. In line with this proposition, several authors have adduced evidence that individuals can be very sensitive to cues indicating rejection (Pickett & Gardner, 2005; for a review see Williams, 2007) and engage in affiliation efforts such as imitating others in response to social exclusion (Lakin & Chartrand, 2005). Based on this reasoning and the quest for significance theory, Study 9 tested whether making individuals feel rejected might accentuate their motivation to self-sacrifice for an important cause.

Method

Participants

Two hundred and forty-one participants (82 men, 159 women; M_{age} = 19.92, SD_{age} = 2.16) were recruited through Amazon's Mechanical Turk. Participants' gender did not yield any effects on the dependent variables; hence it will be omitted from further consideration.

Procedure

Participants were recruited for a study on the meaning of life and were randomly assigned to one of two experimental conditions. In the social rejection condition, participants were asked

to recall a time when they felt left out and isolated from other people. In the control condition, participants were instructed to recall a time when they experienced acute dental pain. The dental pain was included as a control condition because it also entails writing about an unpleasant experience, partially controlling for the valence of the essay. However, to ensure that the experimental manipulations did instill similar emotional experiences, the Positive and Negative Affect Schedule (PANAS) was administered as a manipulation check. It was expected that both types of essays should result in similar amounts of negative and positive affect. Once the PANAS completed, the experiment concluded with administration of the self-sacrifice scale. I hypothesized that participants in the social rejection condition would report a greater readiness to self-sacrifice than participants in the dental pain condition.

Measure

Positive and Negative affect Schedule (PANAS). Ten items were taken from the Positive and Negative Affect Schedule (Watson, Clark, & Tellegen, 1988) to measure participants' current emotional experience. Positive affective states included items such as *active, attentive, alert, determined, inspired* (M = 3.00, SD = .86, α = .85, see Appendix M), whereas negative affective states includes items such as *afraid, ashamed, hostile, nervous, upset* (M = 1.61, SD = .74, α = .84). Participants rated the extent to which they were currently experiencing each of these 10 affective states, using a 5-point scale ranging from 1 (*Not at All*) to 5 (*Extremely*).

Readiness to Self-Sacrifice. Similar to the previous studies in the present series, participants' readiness to self-sacrifice was measured via the self-sacrifice scale (α = .81, M = 3.89, SD = .1.03).

Results

A MANOVA was first conducted to determine if the experimental conditions produced similar affective states. Results indicated that participants in the social rejection condition experienced greater positive affect (M = 3.11, SD = .94) than participants in the dental pain condition (M = 2.89, SD = .76), F (1, 239) = 4.03, p = .04, η_p^2 = .01. Additionally, participants in the social rejection condition experienced greater negative affect (M = 1.74, SD = .84) than in the dental pain condition (M = 1.48, SD = .59), F (1, 239) = 7.69, p = .006, η_p^2 = .03.

In light of these results, an ANOVA was conducted to compare participants' reported self-sacrifice as a function of the experimental conditions, controlling for positive and negative affect. Results indicated no main effect of positive or negative affect (all ps > .05). However, as expected, a main effect of experimental condition was found indicating that participants in the social rejection condition reported greater readiness to self-sacrifice (M = 4.04, SD = 1.14) than participants in the dental pain condition (M = 3.73, SD = .87), F (1, 237) = 4.44, p =.03, η_p^2 = .01. Figure 5 displays the results.

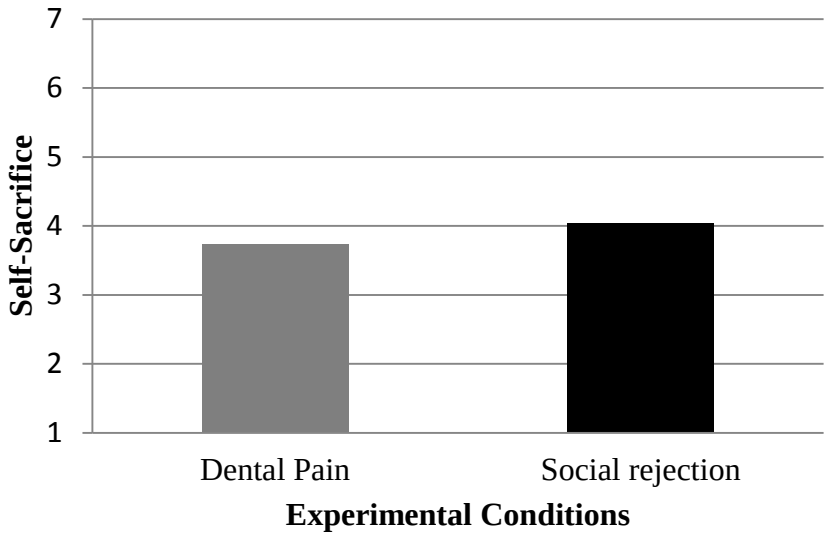


*Figure 5.*Self-Sacrifice as a function of Experimental Conditions (Study 9).

Discussion

Study 9 provided additional evidence for the idea that the quest for significance can be ignited in several ways. Specifically, Study 9 evinced that social rejection is a viable way of energizing the motivation to self-sacrifice. These findings corroborate Baumeister and Leary's assertion (1995) that belongingness is a central human motive with important self-regulatory implications.

In addition to conceptually replicating the findings of Study 8, Study 9 directly manipulated the quest for significance. This methodological improvement is an important step in addressing the limitation of Study 8 which stemmed from reliance on correlational data. By experimentally manipulating the quest for significance, Study 9 provided evidence for the causal link between the quest for personal significance and the readiness to self-sacrifice.

It is important to note that in the present experiment, the dental pain and social rejection conditions differed in terms of emotional experience. Yet, controlling for the intensity of positive and negative affective states, people reported greater readiness to self-sacrifice in the social rejection condition than in dental pain condition. These results supported the experimental hypotheses and ruled out the alternative explanation that the current findings are due to asymmetric emotional experiences. Lastly, Study 9 provided partial evidence for the theoretical claim that the quest for significance is instigated by situations in which individuals are made to feel worthless and meaningless, rather than simply being in a "bad" mood.

Study 10

The quest for significance theory posits several ways in which significance can be reduced. The theory postulates that any situation that reduces one's perception of self-worth should suffice to ignite the desire to regain significance. To adduce additional evidence to

support this postulate, the goal of Study 10 was to conceptually replicate Study 9 with a different quest for significance manipulation. Specifically, Study 10 aimed to activate the quest for significance by frustrating individuals' competence goal, which has also been theorized as a fundamental human motive (Deci & Ryan, 2000). Consistent with hypotheses from Study 9, I predicted that when failing at an important competence task (IQ Puzzles) as opposed to failing a trivial competence task (Fun Puzzles), individuals will try to regain their significance by showing greater willingness to self-sacrifice for an important cause.

Method

Participants

One-hundred and fifty participants (64 men, 84 women, 2 missing; M_{age} = 32.11, SD_{age} = 11.41) were recruited through Amazon's Mechanical Turk. Participants' gender did not yield any effects on the dependent variables; hence it will be omitted from further consideration.

Procedure

Participants were recruited for a study on "Cognition and Puzzles". Participants were presented with 10 difficult Raven Matrices (1962), a common IQ measure. Each Advanced Raven's Progressive Matrice consisted of a 3×3 matrix including various abstract figures organized according to various rules. The bottom right cell of this matrix was blank, and participants were instructed to determine the correct missing figure that best fit the matrix by choosing from eight possible options. Participants were given 45 seconds to solve each problem.

In line with previous research (Bélanger, Lafrenière, Vallerand, & Kruglanski, 2012),the importance of the puzzle task was manipulated by telling participants that the Raven Matrices were either "puzzles used by researchers to diagnose IQ" (IQ condition) or "fun and famous puzzles" (Fun condition). Following the Raven matrices, participants completed a distracting

task (i.e., counting candies). Subsequently, participants were given the same failure feedback: "Your score was not very impressive, your logical skills are mediocre. This was a tough task, but it seems that you have given the wrong answer to most of the questions. Overall, your logical skills are at best average. On a scale of 0 to 10, your score is 5". To measure the effectiveness of the manipulation, the PANAS was then administered, followed by the self-sacrifice scale.

Measures

***PANAS*.** Akin to Study 9, positive (M = 3.08, SD = .90, α = .83) and negative (M = 1.75, SD = .76, α = .80) affect were measured using the PANAS (Watson et al., 1988).

***Readiness to Self-Sacrifice*.** Similar to previous studies, participants' readiness to self-sacrifice was measured with the self-sacrifice scale (M = 3.93, SD = 1.23, α = .84).

Results

A MANOVA was first conducted to determine if the experimental conditions produced different levels of positive or negative affect. It was found that participants in the IQ Puzzle condition did not experienced different amount of positive affect (M = 3.05, SD = .86) than participants in the Fun Puzzle condition (M = 3.06, SD = .97), F (1, 141) = .001, p = .97. Similarly, participants in the IQ Puzzle condition did not experience greater negative affect (M = 1.83, SD = .74) than participants in the Fun Puzzle condition (M = 1.68, SD = .78), F (1, 141) = 1.42, p = .23.

In light of these results, an ANOVA compared participants' reported self-sacrifice as a function of the experimental conditions. As expected, participants in the IQ puzzles condition reported greater readiness to self-sacrifice (M = 4.25, SD = 1.31) than participants in the Fun Puzzle condition (M = 3.59, SD = 1.07), F (1, 141) = 10.83, p =.001, η_p^2 = .07. Figure 6 displays the results.

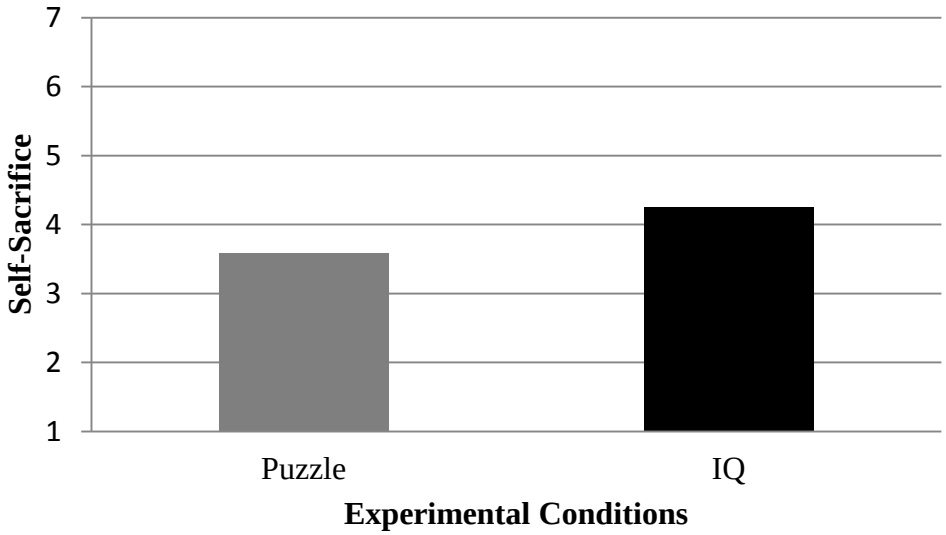


Figure 6. Self-Sacrifice as a function of the Experimental Conditions (Study 10).

Discussion

Study 10 provided a conceptual replication of Study 9 by demonstrating that the quest for personal significance can be activated by casting doubts on individuals' cognitive abilities. Contrary to Study 9 in which participants were instructed to think of different life events (i.e., social rejection or dental pain), Study 10 exposed participants to the same failure information. However, the context in which the failure feedback was presented (i.e., IQ test vs. Fun puzzles) provoked very different results in terms of self-sacrifice. This provides a strong test for the quest for personal significance theory and its proposition that it is personal devaluation that ignites that quest.

Section 3: Turning the Significance Quest Around: The Role of Ideology

Study 11

The findings reported so far have demonstrated that the readiness to self-sacrifice can either lead to violent (Studies 5, 8) or to pro-social behaviors (Studies 6, 7). An important question then is how can these heterogeneous findings be reconciled? Specifically, under what

conditions can self-sacrifice be expected to predict destructive or altruistic behaviors? A possible solution to this conundrum is the type of ideologies people subscribes to. The third section of the research program will examine this possibility by awakening the quest for significance concomitantly with either destructive or peaceful ideologies. Akin to previous studies (5-7), it is expected that when the quest for significance is activated individuals should display greater willingness to self-sacrifice, which in turn should increase the probability that people will indeed elect to self-sacrifice for an important cause. I predicted that when individuals subscribe to destructive ideologies, they should become motivated to self-sacrifice in ways that hurt others (e.g., through a violent self-sacrifice). In contrast, individuals for whom the quest for significance is activated concomitantly with peaceful values should be more inclined to engage in peaceful self-sacrificial behaviors.

Method

Participants

Two-hundred and thirty four hundred undergraduate students (70 men, 164 women; M_{age} = 19.39, SD_{age} = 2.09) were recruited in exchange for course credits. Participants' gender did not yield any effects on the dependent variables; hence it will be omitted from further consideration.

Procedure

Participants were invited to complete three unrelated experiments, namely: on verbal abilities, on creative writing, and on political issues. In the first experiment, participants were randomly assigned either to a control or humiliation condition manipulated via the scrambled sentence technique (Bargh, Chen, & Burrows, 1996; Bargh, Gollwitzer, Lee-Chai, Barndollar, & Trotschel, 2001; Srull & Wyer, 1979), presented as a pilot test for a future study on grammar. Specifically, participants were presented with 15 items, each composed of five words in a

scrambled order; they were instructed to rearrange these words into logical and grammatically correct four-word sentences. Consistent with previous research (Chartrand & Bargh, 1996; Levesque & Pelletier, 2003), primes were embedded in twelve of the fifteen items. In the humiliation condition, the prime words included were *discredit*, *dishonor*, *humiliation*, *reproach*, *ridicule*, *disrespect*, *humiliated*, *disgrace*, *embarrassing*, *shame*, *degrade*, and *derision*. A sample item used in this condition is: "a / feeling / contemplation/ humiliation / is". In the control condition, the primes were *table*, *chair*, *cloud*, *title*, *horizon*, *wire*, *bicycle*, *segment*, *wood*, *tile*, *hurdle*, and *elevator*. A sample item used in this condition is: "we / abstract / paint / shapes / geometric".

Following the scrambled sentence task, participants completed the PANAS and the self-sacrifice scale. Then, participants were presented with the second experiment wherein they were instructed to write a short essay in order to practice their writing skills. Participants were randomly assigned to one of three conditions. In the *peace* condition, participants were presented with the proverb "An eye for an eye makes the whole world go blind". In the *war* condition, participants were presented with the proverb "If you want peace prepare for war". Lastly, in the control condition, participants were shown the proverb "It does not matter how slowly you go, so long as you do not stop". In all conditions, participants were instructed to explain how this proverb could be useful in their life. They had 3 minutes to complete their essay.

Then, participants were invited to participate in the third and final experiment on political issues. Participants were instructed to imagine the following situation:

"You live in a repressive country controlled by a ruthless dictator. Your people have gathered around the city square to protest in favor of Democracy. The government has sent out a tank to kill the protesters and crush this social movement. The tank is on its way to kill the

protesters. The tank will cross your path before getting to the democracy supporters. What will you do?"

Participants could choose one of the three following options: (1) Block the tank by getting in front of it, die in the process, but allow the democracy supporters to be saved and continue their struggle for democracy, (2) Destroy the tank using a bomb-belt strapped around your chest, die in the process, but allow the democracy supporters to be saved and continue their struggle for democracy, or (3) Observe the situation from afar without interacting, you stay alive, but the democracy supporters are killed by the tank. A visual representation of the scenario was displayed to facilitate its comprehension (see Figure 7). After making their choice, participants were thanked and debriefed.

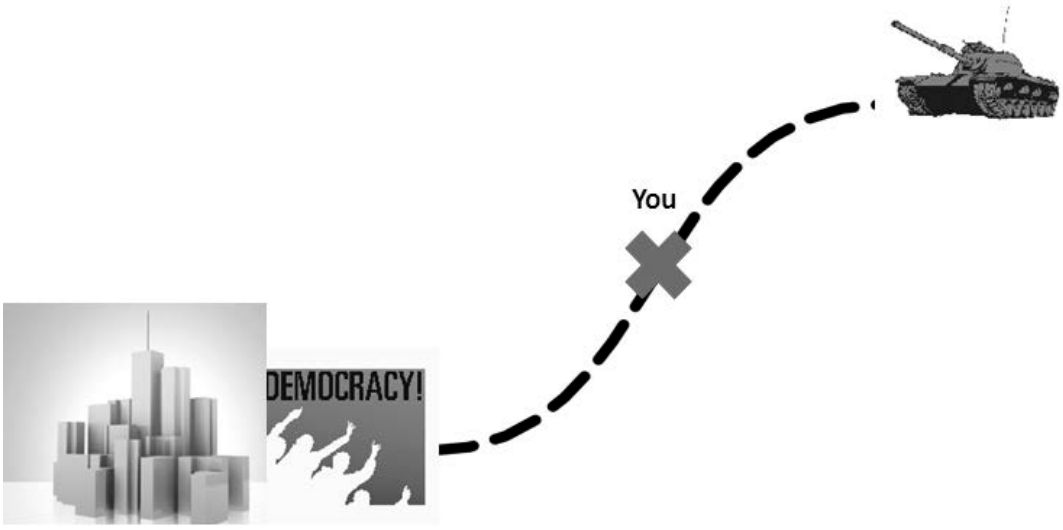


Figure 7. Schematic representation of the scenario (Study 11).

Measures

PANAS. Positive and negative affect were measured using ten items taken from the PANAS (Watson et al., 1988). Positive affect items included *determined*, *alert*, *inspired*, *excited*, and *enthusiastic* (M = 2.35, SD = .73, α = .79), whereas negative affect items included *ashamed*, *hostile*, *upset*, *nervous*, and *scared* (M = 1.45, SD = .58, α = .77). Participants rated the extent to

which they were currently experiencing each of these 10 affective states using a 5-point scale ranging from 1 (*Not at All*) to 5 (*Extremely*).

Readiness to Self-Sacrifice. Participants' readiness to self-sacrifice was measured with the self-sacrifice scale (M = 3.99, SD = 1.08, α = .83).

Results

A MANOVA was first conducted to determine if the experimental conditions produced different levels of positive or negative affect. It was found that participants in the humiliation condition did not experienced a different amount of positive affect (M = 2.31, SD = .75) than participants in the control condition (M = 2.39, SD = .71), F (1, 232) = .71, p = .40. Similarly, participants in the humiliation condition did not experience greater negative affect (M = 1.51, SD = .65) than participants in the control condition (M = 1.39, SD = .50), F (1, 232) = 2.22, p = .13.

Then, an ANOVA was conducted to determine whether the experimental manipulation had any effect on participants' readiness to self-sacrifice. Although trending in the right direction, results indicated that participants in the humiliation condition (M = 4.07, SD = 1.08) did not report different levels of self-sacrifice than participants in the neutral condition (M = 3.91, SD = 1.08), F (1, 232) = 1.18, p = .27. Given that the motivation manipulation had no bearing on the proposed mediator (preventing us from testing the proposed moderated mediation model), I tested for the interactions between motivation (humiliation condition coded as 1, the control condition coded as 0), proverbs (represented by two dummy coded variables with Peace and War proverbs being coded as 1 and neutral proverb being the reference category), and self-sacrifice. Following Aiken and West's (1991) procedures, all independent variables were centered before calculating the interaction terms.

The dependent variable was whether participants chose to (1) stay alive by being a passive observer, (2) die by blocking the tank to save the supporters, or (3) die by destroying the tank with a bomb-belt to save the supporters. The dependent variable consisted of three non-ordered categorical responses. Consequently, I conducted multinomial logistic regressions with maximum likelihood estimation to test my hypotheses. This statistical approach allows the simultaneous estimation of probabilities of choosing one action (e.g., blocking the tank) versus another (e.g., being a passive observer) and tests whether these probabilities differ as a function of all the predictors included in the multinomial model. The odds ratio (i.e., Exp(*B*)) represents the change associated with a one-unit change in a predictor variable while other predictors are held constant. Choosing to be a passive observer was treated as the reference category to which I contrasted the options of blocking or destroying the tank.

I first tested the described fully parameterized model. A chi-square test indicated improved fit after accounting for the independent variables, χ^2 (22) = 64.81, $p < .05$. Nagelkerke's pseudo R^2 measure was .27, suggesting that these relationships were moderately strong. Table 8 displays the results.

Table 8

Results of the multinomial logistic regression comparing choosing to block the tank vs. being a passive observer and destroying the tank vs. being a passive observer

Variables	Blocking Tank vs. Observing	Destroying Tank vs. Observing
Self-Sacrifice	2.28	1.96
Motivation	.34	.13**
Peace Proverb (Peace =1, Neutral = 0)	.60	.54
War Proverb (War =1, Neutral = 0)	.61	.79
Motivation × Self	1.43	2.69
Motivation × Peace Proverb	5.92*	7.90*
Motivation × War Proverb	6.59*	7.11*
Self-Sacrifice × Peace Proverb	1.70	1.22
Self-Sacrifice × War Proverb	4.56	.76
Self-Sacrifice × Motivation × Peace	.22	.31
Self-Sacrifice × Motivation × War	.21	.39

*$p < .05$. **$p < .01$. The coefficients are odds ratio

With regard to participants' preference for blocking the tank as opposed to being a passive observer, results indicated no significant main effects. However, the interactions composed of motivation × peace proverb (Exp(B) = 5.92, $p < .05$) and motivation × war proverb (Exp(B) = 6.59, $p < .05$) were found to be significant.

Further analyses were conducted to decompose the motivation × peace proverb interaction. In the humiliation condition, results indicated that the odds of choosing to block the tank (vs. observing the situation) were 3.6 times greater in the peace than in the neutral proverb condition (Exp(B) = 3.60, $p < .05$), whereas the odds of making a similar choice for participants in the control condition/peace proverb were .60 times as great as participants in the control condition/neutral proverb (Exp(B) = .60, $p = .44$). As the significant interaction term indicates,

these two odds ratio were statistically different and the odds of blocking the tank were 5.92 times greater in the humiliation condition than in the neutral condition. Thus, supporting my hypothesis, the present findings demonstrate that participants were more likely to choose blocking the tank (vs. being a passive observer) in the humiliation condition (vs. control condition) when guided by peaceful (vs. neutral) ideologies.

Further analyses were conducted to decompose the motivation × war proverb interaction. In the humiliation condition, results indicated that the odds of choosing to block the tank (vs. observing the situation) were 4.06 times greater in the war condition than in the neutral proverb condition (Exp(B) = 4.06, $p < .05$), whereas the odds of making a similar choice for participants in the control condition/war proverb were .61 times as great as participants in the control condition/neutral proverb (Exp(B) = .61, $p = .50$). As the significant interaction term indicates, these two odds ratio were statistically different and the odds of blocking the tank were 6.59 times greater in the humiliation condition than in neutral condition. The present findings thus indicate that participants were more likely to choose blocking the tank (vs. being a passive observer) in the humiliation (vs. control condition) when guided by hostile (vs. neutral) ideologies.

Additional analyses compared choices on the tank task under peaceful versus hostile ideologies. Results indicated that, in the control condition, participants primed with peaceful ideologies chose to block the tank (vs. being a passive observer) as much as participants primed with hostile ideologies, (Exp(B) = .98, $p = .98$). Similar results were found in the humiliation condition, (Exp(B) = .88, $p = .83$). The interaction term comparing these odds (motivation × proverbs) was not significant (Exp(B) = .90, $p = .91$), indicating that the odds ratio were not different from one another.

With regard to participants' preference for destroying the task as opposed to being a passive observer, results indicated a main effect of motivation (Exp(*B*) = .13, *p* = .01) showing that participants in the humiliation and neutral proverb condition had odds .13 as great as participants in the control and neutral proverb condition . More importantly, results indicated a significant interaction of motivation and peace proverb (Exp(*B*) = 7.90, *p* = .04) and a significant interaction with motivation and war proverb (Exp(*B*) = 7.11, *p* = .05).

Further analyses were conducted to decompose the motivation × peace proverb interaction. In the humiliation condition, results indicated that the odds of choosing to explode with the tank (vs. observing the situation) were 4.3 times greater in the peace condition than in the neutral proverb condition (a marginally significant effect, Exp(*B*) = 4.30, *p* = .08), whereas the odds of making a similar choice for participants in the control condition/peace proverb were .54 times as great as participants in the control condition/neutral proverb (Exp(*B*) = .54, *p* = .29). As the significant interaction term indicates, these two odds ratios were statistically different and the odds of destroying the tank were 7.90 greater in humiliation condition than in the control condition. Thus, the present findings support the idea that participants were more likely to choose destroying the tank (vs. being a passive observer) in the humiliation (vs. control condition) when guided by peaceful (vs. neutral) ideologies.

Further analyses were conducted to decompose the motivation × war proverb interaction. In the humiliation condition, results indicated that the odds of choosing to destroy the tank (vs. observing the situation) were 5.64 times greater in the war condition than in the neutral proverb condition (Exp(*B*) = 5.64, *p* < .05), whereas in the control condition, the odds of making a similar choice for participants under war proverb were .79 times as great as participants in the neutral proverb condition (Exp(*B*) = .79, *p* = .69). As the significant interaction term indicates,

these two odds ratio were statistically different and the odds of exploding oneself with the tank were 7.11 times greater in the humiliation condition than in the control condition. Additionally, these findings demonstrate that participants were more likely to choose destroying the tank (vs. being a passive observer) in the humiliation (vs. control) condition when guided by hostile (vs. neutral) ideologies.

Additional analyses compared choices on the tank task under peaceful versus hostile ideologies. Results indicated that, in the control condition, participants primed with peaceful ideologies chose to explode themselves with the tank (vs. being a passive observer) as much as participants primed with hostile ideologies (Exp(B) = .68, p = .54). Similar results were found in the humiliation condition (Exp(B) = .76, p = .67). The interaction term comparing these odds (motivation × proverbs) was not significant (Exp(B) = 1.11, p = .90).

Discussion

The main objective of Study 11 was to provide evidence for the role of ideology in self-sacrificial behavior. I proposed a model wherein the quest for personal significance would enhance individuals' readiness to self-sacrifice which would in turn increase individuals' tendency to select self-sacrificial behavior. In addition to these hypotheses, I predicted that the type of self-sacrificial behavior selected would be influenced by people's ideologies. Specifically, I predicted that when guided by peaceful ideologies, people should opt for peaceful self-sacrificial behavior (saving democracy protesters by blocking an enemy tank with one's body), whereas under hostile ideologies, I predicted that individuals should prefer self-sacrificial behavior aimed at hurting others (i.e., blowing themselves up with explosive and destroying the enemy tank). The results of Study 11 provided partial evidence for these hypotheses.

One of my hypotheses that did not receive support in the present study is the relationship between activated quest for personal significance activation and people's readiness to self-sacrifice (as measured by the self-sacrifice scale). Indeed, despite trending results, Study 11 did not replicate the effect found in Studies 8, 9, and 10. Moreover, the self-sacrifice scale was not found to be a significant predictor of self-sacrificial behavior. One reason to explain the lack of findings in both cases is that the self-sacrifice scale utilized in Study 11 was too general rather than tailored to the specific content of the experiment (i.e., dying to save the democracy supporters). Presumably, a measure of people's readiness to self-sacrifice for the democracy supporters would have been more predictive.

Despite these findings, the results of Study 11 indicated that activating the quest for personal significance did accentuate participants' willingness to choose self-sacrificial behaviors in the tank scenario. However, this effect was only produced when the quest for significance was activated in conjunction with either peaceful or hostile ideologies (as opposed to a neutral ideology). These findings suggest that the significance quest does increase the probability of choosing to self-sacrifice for a cause, but this motivation requires a direction which is provided by contextually salient ideologies. In Study 11, results indicated that such direction wasn't made sufficiently clear. It was shown that whether peaceful or hostile ideologies were activated (concomitantly with the quest for personal significance), they both led to greater self-sacrificial behaviors, irrespective of whether enacted in a peaceful or hostile way. Consequently, the hypothesis that ideology impacts *how* people self-sacrifice was not supported. Nonetheless, the present results did demonstrate that ideologies are important in affecting people's choice to self-sacrifice or not.

The reason why peaceful and hostile ideologies did not predict self-sacrificial behaviors differently remains unclear. It could be that participants primed with peaceful ideologies conceived of blocking or destroying the tank as substitutable means for the goal of promoting peace. Perhaps a more distinctive manipulation of ideology would have functioned as expected. Recall that hostile ideology was primed with the proverb "if you want peace prepare for war". It is thus unclear whether this proverb primed peaceful (if you want peace) or hostile ideologies (prepare for war). Similarly, the proverb "eye for an eye makes the world go blind" refers simultaneously to the notion of hostility while hinting at conflict resolution.

Overall, Study 11 supports the idea that when coupled with the quest for personal significance, peaceful and hostile ideologies do increase the chance of people engaging in acts of self-sacrifice. However, due to the present methodology, it remains unclear whether peaceful and hostile ideologies can differentially guide how people choose to self-sacrifice.

Study 12

The aim of Study 12 was to further document how ideologies influence peaceful and hostile self-sacrificial behavior. To that end, Study 12 utilized a different approach from Study 11. One would recall that in Study 11 peaceful and aggressive ideologies were rendered salient by having participants read proverbs and reflect upon them. As previously discussed, this methodology had some limitations, as the proverbs could have primed both peaceful and hostile ideologies. To address this issue, Study 12 was designed to manipulate the accessibility of ideologies by subliminally priming participants with words uniquely related to either peace or hostility. In addition to this methodological improvement, Study 12 aimed to awaken the quest for significance with a manipulation of significance loss and a manipulation of potential significance gain (which hasn't been tested so far). Study 12 investigated similar hypotheses to

those of Study 11: The quest for personal significance should lead to greater readiness to self-sacrifice, which in turn should predict greater self-sacrificial behavior. Under a hostile mindset, people should become motivated to self-sacrifice in ways that hurt other people; under a peaceful mindset people should be inclined to engage in peaceful self-sacrificial behaviors.

Method

Participants

One hundred and fifty-four undergraduate students were recruited and entered into a raffle to win one of four $50 cash prizes. The gender of the participants was not recorded due to computer problems.

Procedure

Upon arrival at the laboratory, participants were ushered to a private room. They were told that they would participate in two different studies: One on verbal abilities, the other on physical pain. In the first study, participants were randomly assigned to one of three writing tasks designed to manipulate the quest for significance. In the significance loss condition, participants were given the following mortality salience manipulation (Greenberg et al., 1997):

Write about (1) what would physically happen to you if you were to die, and (2) describe the feelings that the thoughts of dying arouse in you."

In the significance gain condition, participants were asked to:

"Write about (1) what would happen to you if you were to become someone socially important, and (2) describe the feelings that the thoughts of becoming "someone" arouse in you".

In the control condition (Pyszczynski et al., 2006), participants were asked to:

"Write about (1) what would physically happen to you if you were to experience dental pain and (2) the feelings associated with dental pain".

After completing the writing task, participants completed the PANAS and the self-sacrifice scale. They were then presented with a computer task ostensibly to assess their verbal abilities. In this task, participants were instructed to judge, as quickly as possible, whether different strings of letters represent a word (e.g., pear) or a non-word (e.g., eqrtz). Unbeknownst to them, prior to the presentation of the target word or non-word, a subliminal prime was presented on the computer screen for a period of 17 milliseconds. Cross-cutting the motivation manipulation, participants were randomly assigned to one of two ideology conditions. In the peace condition, participants were subliminally exposed to words such as *harmony*, *peace*, *resolution*, *friends,* whereas in the war condition they were exposed words such as *destruction*, *war, battle, conflict*. The primes appeared in the center of the screen and were backward as well as forward masked by a letter string (e.g., "xxxxxxxxxxxxx") at least equal in length to the primes to ensure that it does not reach the threshold of conscious awareness (Rayner, 1978). Eighty trials were presented. Similar procedures have been successfully used in the past for unconscious goal priming (e.g., Bargh, Gollwitzer, Lee-Chai, Barndollar, & Trotschel, 2001; Dijksterhuis, Aarts, Bargh, & van Knippenberg, 2000; Kawakami, Dovidio, & Dijksterhuis, 2003; Shah & Kruglanski, 2003).

After completing the lexical decision task, participants were presented with the second experiment, referred to as the "Scholarship". The study was introduced by telling participants that the Departments of Psychology and Biology are collaborating on a pain study. Participants were told that if they were to volunteer, they would be given hot sauce (Tabasco^{TM} sauce) and the experimenter would then measure how much pain they are experiencing. Because pain is generally not experienced as enjoyable, the departments have agreed to "give back" to the community by creating a scholarship that would benefit either one psychology major or one

biology major (but not the participants personally). The scholarship was described as a competition whereby the department that would collect the most money, but not the remaining department, would allocate one scholarship to one of its students. On the computer screen, participants read that both scholarships would start at $25 and if they were to participate in the study they could do one of two things: (1) take one teaspoon of hot sauce to give $1 to the Psychology Scholarship, or (2) take one teaspoon of hot sauce to subtract $1 from the Biology Scholarship. Choosing to support the Psychology scholarship was conceptualized as a form of "peaceful self-sacrifice" as it involves experiencing pain on behalf of the ingroup (i.e., Psychology), whereas choosing to support the Biology scholarship was conceptualized as "violent self-sacrifice" as it involves suffering pain in order to deprive the outgroup (i.e., Biology).

Measures

Positive and Negative affect Schedule (PANAS). Fourteen items taken from the Positive and Negative Affect Schedule (Watson, Clark, & Tellegen, 1988) were used to measure participants' current emotional experience. Positive affective states included feeling *alert, determined*, *enthusiastic*, *excited*, *inspired*, *proud*, *strong* (M = 2.37, SD = .66, α = .73, whereas negative affective states included feeling *ashamed* guilty, *hostile*, *irritable*, *nervous*, *scared*, *upset* (M = 1.49, SD = .57, α = .81). Participants rated the extent to which they were currently experiencing each of these affective states, using a 5-point scale ranging from 1 (*Not at All*) to 5 (*Extremely*).

Readiness to Self-Sacrifice. Akin to previous studies, the self-sacrifice scale (M = 4.11, SD = 1.03) measured participants' readiness to self-sacrifice (α = .80).

Pain Scale. Similar to Study 7, participants' pain was measured after each tea spoon of hot sauce using the Wong-Baker Pain scale (Wong & Baker, 1988). Participants indicated how much pain they felt by circling the appropriate face (M = 4.58, SD = 2.29).

Teaspoons. The number of teaspoons (M = 2.67, SD = 5.11) taken by participants during the pain study varied between 0 and 35.

Results

A MANOVA was first conducted to determine if the motivation manipulation produced different levels of positive and negative affect. It was found that participants in the neutral, mortality salience, and significance gain conditions experienced similar levels of negative affect, F (2, 151) = 1.50, $p > .05$. However, results indicated that these conditions experienced different levels of positive affect, F (2, 151) = 3.74, $p < .05$. Subsequent analyses indicated that participants in the significance gain condition (M = 2.58, SD = .60) experienced greater positive affect than participants in the mortality salience (M = 2.25, SD = .74), F (1, 99) = 7.55, $p < .01$, and neutral conditions (M = 2.29, SD = .60), F (1, 100) = 4.43, $p < .05$; the latter two conditions reported similar levels of positive affect, F (1, 103) = .13, p = .71.

A second MANOVA was then conducted to determine whether the motivation manipulation had any impact on participants' readiness to self-sacrifice. Results indicated that participants in the mortality salience (M = 4.15, SD = .96) and significance gain conditions (M = 4.18, SD = 1.20) reported similar readiness to self-sacrifice than participants in the neutral condition (M = 3.99, SD = .92), F (2, 151) = .51, p = .59. Given that the motivation manipulation had no bearing on the proposed mediator (preventing us from testing the proposed moderated mediation model), I tested for the interactions between motivation (represented by two dummy coded variables with mortality salience and significance gain coded as 1 and the neutral

condition being the reference category coded as 0), ideology (coded 1 for hostility and coded 0 for peace), and self-sacrifice, while controlling for positive and negative affect. Following Aiken and West's (1991) procedures, all independent variables were centered before calculating the interaction terms.

Using these predictors, multiple regression analyses were conducted on the number of teaspoons of hot sauce that participants consumed to increase the psychology scholarship and on the level of pain endured while doing so. All predictors included in these two analyses were non-significant (all *p*s > .1), except for ideology, which indicated that participants in the hostility condition experienced greater pain than participants in the peace condition when eating hot sauce to increase the psychology scholarship (B = .61, $t = 2.52$, $p = .013$, $sr^2 = .04$), controlling for all other predictors in the model. Table 9 summarizes the results.

Table 9

Results of multiple regression analyses predicting the number of teaspoons of hot sauce consumed and pain experienced to increase the psychology scholarship.

Variables	Number of teaspoons for Psychology			Pain experienced for Psychology		
	B	*SE B*	β	*B*	*SE B*	β
Self-Sacrifice	.32	.39	.07	.10	.24	.03
Significance Gain (Significance = 1, Neutral = 0)	.26	.44	.05	.11	.28	.03
Mortality Salience (Mortality = 1, Neutral = 0)	.25	.43	.05	.04	.27	.01
Ideology (Hostile =1, Peaceful = 0)	.20	.38	.04	.61	.24	.21**
Positive Affect	.86	.60	.12	.06	.37	.01
Negative affect	-.16	.69	-.02	.35	.43	.07
Self-Sacrifice × Significance Gain	-.04	.44	-.01	-.43	.27	-.16
Self-Sacrifice × Mortality Salience	-.28	.46	-.06	-.17	.29	.05
Self-Sacrifice × Ideology	.53	.39	.11	-.01	.24	-.00
Significance Gain × Ideology	.02	.44	.00	-.05	.27	-.01
Mortality Salience × Ideology	-.19	.43	-.04	.17	.27	.06
Self-Sacrifice × Significance Gain × Ideology	-.11	.44	-.02	-.06	.27	-.02
Self-Sacrifice × Mortality Salience × Ideology	.24	.47	.05	.03	.29	.01

Note. All predictors were mean centered before analysis. *$p < .05$. **$p < .01$.

Multiple regression analyses were also conducted on the number teaspoons of hot sauce eaten to decrease the biology scholarship and on the level of pain experienced while doing so. Results indicated a main effect of significance gain, (B = .27, $t = 2.19$, $p = .03$, $sr^2 = .03$)

showing that participants in the significance gain condition ate more hot sauce than participants in the control condition, while controlling for all other variables in the model. Moreover, the ideology × motivation (significance gain vs. neutral) interaction term was found significant, (B = .26, t = 2.11, p = .03, sr^2 = .02).

Simple effect analyses were conducted to test whether participants in the neutral motivation condition ate more hot sauce as a function of the priming conditions (peace vs. hostile). Results indicated that participants ate similar amount of hot sauce in the peace (M = .14, SE = .30) and hostile (M = .28, SE = .31) priming conditions, F (1, 97) = .09, p = .76. However, in line with my predictions, participants in the significance gain condition ate more hot sauce to decrease the biology scholarship in the hostile priming condition (M = 1.33, SE = .31) than in the peace condition (M = .20, SE = .31), F (1, 97) = 6.47, p < .01. Figure 8 displays the results.

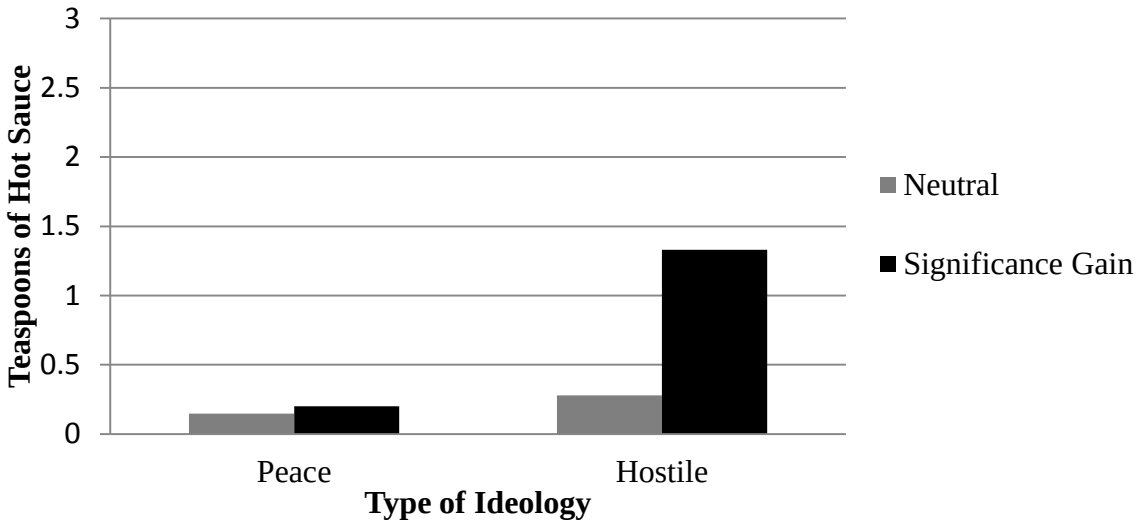


Figure 8. Number of teaspoons of hot sauce eaten to decrease the biology scholarship as a function of motivation and the type of ideology (Study 12).

Additional multiple regression analyses were conducted on the amount of pain experienced when eating hot sauce to decrease the biology scholarship. Results indicated a main effect of significance gain, (B = .35, t = 2.66, p < .01, sr^2 = .04), which indicated that participants

in the significance gain condition ate more hot sauce than participants in the neutral condition, while controlling for all other variables in the model. Moreover, the ideology × motivation (significance gain vs. neutral) interaction term was found significant, (B = .27, t = 2.09, p = .03, sr^2 = .02).

Simple effect analyses were conducted to test whether participants in the neutral motivation condition experienced more pain as a function of the priming conditions (peace vs. hostile). Results indicated that participants experienced similar amount of pain in the peace (M = .29, SE = .30) and hostile priming conditions (M = .46, SE = .32), F (1, 97) = .14, p = .70. However, participants in the significance gain condition experienced more pain when eating hot sauce to decrease the biology scholarship in the hostile priming condition (M = 1.22, SE = .32) than in the peace condition (M = .45, SD = .31, F (1, 97) = 2.81, p = .09 (marginally significant). Table 10 summarizes the results.

Table 10

Results of multiple regression analyses predicting the number of teaspoons of hot sauce consumed and pain experienced to decrease the biology scholarship.

Variables	Number of teaspoons for Biology			Pain experienced for Biology		
	B	*SE B*	β	*B*	*SE B*	β
Self-Sacrifice	.03	.11	.02	.07	.11	.05
Significance Gain (Significance = 1, Neutral = 0)	.27	.12	.20*	.35	.13	.25**
Mortality Salience (Mortality = 1, Neutral = 0)	.09	.12	.07	.11	.12	.08
Ideology (Hostile =1, Peaceful = 0)	.18	.10	.14	.12	.11	.08
Positive Affect	.09	.16	.04	-.09	.17	-.04
Negative affect	-.27	.19	-.11	-.28	.20	-.11
Self-Sacrifice × Significance Gain	.13	.12	.11	.03	.13	.03
Self-Sacrifice × Mortality Salience	.03	.13	.02	.16	.13	.11
Self-Sacrifice × Ideology	.09	.11	.06	-.00	.11	-.00
Significance Gain × Ideology	.26	.12	.19*	.27	.13	.19*
Mortality Salience × Ideology	.06	.12	.04	.10	.12	.07
Self-Sacrifice × Significance Gain × Ideology	.08	.12	.06	-.13	.13	-.10
Self-Sacrifice × Mortality Salience × Ideology	-.00	.13	-.00	.08	.14	.05

Note. All predictors were mean centered before analysis. *$p < .05$. **$p < .01$.

Discussion

Study 12 aimed to further document the role of ideology in self-sacrificial behavior. I hypothesized that significance loss (i.e., mortality salience) and significance gain would increase people's readiness to self-sacrifice which in turn would either increase the number of peaceful

(helping the ingroup) or hostile self-sacrificial (harming the outgroup) behaviors enacted, depending on the type of ideology rendered accessible.

Contrary to my hypotheses, significance loss and significance gain had no impact on individuals' readiness to self-sacrifice and the latter variable showed no relationship with the amount of hot sauce people ate or the amount of pain they experienced during the experiment. These results are similar to those of Study 11 and it is possible that the scale failed to predict the hypothesized behaviors because it was not tailored to the specifics of the experiment (i.e., self-sacrifice for the scholarship).

One hypothesis that was partially supported in Study 12 is the interactive effect of the significance quest and ideologies accessibility on self-sacrificial behaviors. Indeed, it was shown that participants guided by hostile ideologies concomitantly with hopes of increasing their significance ate more hot sauce to hinder the outgroup (biology) and experienced greater pain while doing so than participants for whom the quest for significance was not awakened. These results support the idea that the quest for personal significance can increase hostile behaviors when coupled with hostile ideologies. However, results of Study 12 did not demonstrate the same effect on peaceful behaviors: The quest for significance (gain or loss) and ideologies (peaceful or hostile) did not influence the amount of teaspoons of hot sauce taken to support the ingroup. Hostile ideologies positively influenced the amount of pain experienced when eating hot sauce for the ingroup, but this result is not readily interpretable given that hostile ideologies were not related to the quantity of hot sauce taken.

Overall, Study 12 supports the idea that when coupled with the quest for significance gain, hostile ideologies encourage people to engage in self-sacrificial behaviors directed to harm

others and experience greater pain while doing so. However, the present results do not support the notion that the quest for personal significance can be redirected toward peaceful behaviors.

General Discussion

The present dissertation consists of one the first empirical forays into the psychology of martyrdom. In essence, the goal of this project was to understand *why*, and *under what circumstances*, individuals are willing to sacrifice their lives for a cause. Research described here aimed to (1) create a new tool to quantitatively assess individuals' propensity toward self-sacrifice, (2) investigate the motivational forces potentiating self-sacrifice, and (3) find ways of redirecting these forces in a constructive direction, paving the way to conciliation, pro-social behaviors, and harmony in intergroup relations. Empirical evidence for each of these sections is discussed below.

A New Measure of Self-Sacrifice

Using the self-sacrifice scale as a guiding tool, the first section of this dissertation provided support for the present conceptualization of martyrdom. Results from exploratory and confirmatory factor analyses revealed that the self-sacrifice scale was composed of a single factor with the addition of two method-factors (Study 1). Furthermore, the scale exhibited good convergent validity: It predicted positive evaluation and commitment toward a given cause and was positively correlated with altruism, meaning in life, belief in god, and other relevant motivational constructs related to high goal-commitment such as harmonious and obsessive passions (Studies 1 & 2). Exploratory analyses revealed that the self-sacrifice scale was not related to the Big Five personality dimensions; however, in line with expectations the scale offered good discriminant validity and wasn't related to optimism, fatalism, or psychopathological indices such as depression or suicidal ideation (Studies 1 & 2). The self-

sacrifice scale also demonstrated test-retest reliability (Study 3) and was discriminative of different groups of people with different dispositional readiness to self-sacrifice (Study 4).

In addition to being psychometrically sound, the self-sacrifice scale exhibited satisfactory predictive validity with regards to affective, cognitive, and behavioral phenomena. Specifically, it predicted individuals' willingness to engage in extreme means to promote a cause (e.g., joining radical groups, sabotaging, and physically attacking others) and the extent of animosity they felt toward other people with antagonistic beliefs (Study 5). Results also indicated that the greater the readiness to self-sacrifice (as measured by the scale) the less people hesitated to self-sacrifice (i.e., faster pulling of the trigger to blow themselves up to accomplish their goal; Study 6) and the greater their readiness to engage in costly means (i.e., experiencing intense and prolonged pain) to support a cause of great personal importance (Study 7).

Overall, these findings provide strong support for the conceptualization of martyrdom and for the self-sacrifice scale whose purpose is to test theoretically-driven hypotheses in the social sciences, especially the psychology of terrorism, a topic further explored in the second section of this manuscript.

The Quest for Personal Significance and Self-Sacrifice

Understanding the psychological underpinnings of martyrdom has posed a serious challenge to social scientists in the last decades. Beyond the difficulty of collecting empirical evidence on a controversial topic with inaccessible (and potentially life-threatening) samples, researchers have also struggled with making sense of and synthesizing the ever-piling literature on the subject. From honor, vengeance, to feminism, the list of potential motives to explain self-sacrificial behavior, and suicide terrorism in particular, has been considerable. A promising implication of the quest for personal significance theory (Kruglanski et al., in press; Kruglanski

et al., 2009) is to offer a unifying framework for understanding this seemingly scattered and unwieldy body of knowledge. The aim of the second section of my dissertation was to test several predictions of this theory.

The first main prediction was whether highlighting people's personal significance would increase their motivation to self-sacrifice for an important cause. Results from Studies 8, 9, and 10 provided converging evidence for this hypothesis: Feeling insignificant, experiencing social rejection, and feeling incompetent were all conditions that momentarily augmented individuals' willingness to self-sacrifice. Importantly, these effects were found with terrorist and non-terrorist samples, increasing the generalizability of these findings. In the case of the LTTE, feeling insignificant (i.e., small, worthless) increased Tamil Tigers' readiness to self-sacrifice, which in turn predicted the extent to which they supported armed struggle to create an independent Tamil state. These results illustrate the pertinence of the quest for personal significance theory for contemporary political and religious conflicts.

I also probed a second hypothesis, namely that the quest for personal significance would be instigated by the prospect of significance gain. To that end, participants in Study 12 reflected upon the possibility of becoming "someone" in society and then reported their readiness to self-sacrifice. Contrary to my hypotheses, the potential for significance gain, at least as manipulated here, did not directly increased people's readiness to self-sacrifice. As discussed previously, the self-sacrifice scale may have been insensitive to the present experimental manipulation because it did not specifically relate to the content of the issues at hand. Despite the fact that significance gain (and significance loss) did not always influence the self-sacrifice scale directly, the significance quest consistently played a role in predicting people's self-sacrificial behavior: A topic that I explored in the third part of my dissertation by looking at the influence of ideologies.

The Role of Ideology in Self-Sacrifice

Results reported in the first two sections of this dissertation demonstrated that self-sacrifice is a phenomenon related to both violent (e.g., Studies 5 and 8) and pro-social behaviors (e.g., Studies 6 and 7). In the third section, I attempted to further understand these findings and hypothesized that ideologies would play an important role in predicting the type of self-sacrificial behaviors that people would enact when their quest for personal significance is activated. I reasoned that hostile and peaceful ideologies would lead to violent and peaceful self-sacrificial behaviors, respectively. Results reported in the last two experiments provided partial evidence for this perspective.

Specifically, in Study 11, when the quest for personal significance was awakened in combination with peaceful or hostile ideologies (as opposed to a neutral ideology), participants were more likely to choose to self-sacrifice rather than remaining passive and uninvolved in the portrayed event. However, the type of ideology (either peaceful or hostile) did not predict distinctively whether participants preferred to engage in *peaceful* or *hostile* self-sacrificial behaviors. In other words, ideology-driven individuals were as likely to choose both types of self-sacrificial behavior over remaining passive. The lack of differentiation between peaceful and hostile behavior could be explained by the manipulation of ideology utilized in Study 11. Indeed, both peaceful and hostile proverbs that participants reflected upon included both peace and hostility related words. Consequently, both might have primed the same ideology (e.g., hostility). For that reason, Study 11 was deemed insufficient for drawing a clear picture of the role of ideology in self-sacrificial behaviors.

In Study 12, the ambiguity of Study 11's results was partially resolved by experimentally increasing the accessibility of peaceful or hostile ideologies using a priming procedure that

presented words uniquely related to each ideological category. In line with expectations, individuals seeking to gain significance while guided by hostile ideologies inflicted upon themselves greater pain in order to hinder the outgroup (hostile self-sacrifice). However, the opposite pattern of results was not found: Pursuing significance with peaceful ideologies did not augment people's propensity to self-sacrifice to help their ingroup (peaceful self-sacrifice).

In summary, the present work has found the conditions under which individuals are more likely to relinquish their physical and emotional well-being to cause harm to others, but the notion that the quest for personal significance can be redirected toward peaceful actions has yet to be supported.

Implications

The current research has broad theoretical and practical implications relevant to increasing international security and stability.

At the theoretical level, this dissertation examined terrorism-related issues under the guidance of a novel theoretical framework that illuminates the underlying motives of self-sacrifice. Whereas previous research on terrorism has been relatively unintegrated, the *quest for personal significance* theory synthesizes prior findings under a unifying framework affording testable predictions concerning (1) *why*, and under what conditions, individuals are willing to self-sacrifice for an important cause and (2) *how* does this motivation relate to hostile and peaceful behaviors. The *quest for significance* theory constitutes thus a model through which terrorism can be understood, it affords novel insights into major issues at the intersection of peace, security, and conflict resolution. Tangible applications afforded by this dissertation include suggestions for (1) developing strategies aimed to undermine acts of terrorism and

terrorism recruitment, and (2) creating more efficient deradicalization programs worldwide. These are discussed in turn.

Terrorist organizations (e.g., al-Qaeda and its affiliates) are driven by ideologies. They demand "strict obedience to a state of mind and prescribe how members should think, feel, and behave" (Matt, 2010, p. 10). Understanding the motivation to join the ranks of these organizations is thus crucial to the development of strategies geared toward abating their pool of potential recruits. The *quest for personal significance* theory suggests that one potential reason for why terrorist organizations are appealing to many is that they fulfill a crucial need: The need to reach *personal significance* ("to be someone", "be recognized", "to matter"). In that sense, terrorist organizations, as any other type of organizations, appeal to a large audience by providing a positive group-identity and a sentiment of recognition. For instance, in the Middle-East and South-East Asia, suicide bombers are depicted as heroes and selfless martyrs, instantly catapulted to the rank of "demi-gods" for their actions. Consequently, curbing the appeal of extreme ideologies may necessitate deep cultural changes through disseminating the notion that terrorism is not a viable means to the goal of significance. This colossal task requires social actors with considerable epistemic authority (e.g., priests, politicians) to publicly address these contentious issues and to proffer a new narrative revisiting the beliefs that acts of terrorism are honorable and socially acceptable.

In the same vein, understanding the conditions under which the quest for personal significance is activated entails several implications to reducing the incidence of terrorism. Recall how the infamous Danish cartoons of the prophet Muhammad, collateral damages during conflicts (e.g., the use of drones in Pakistan), and prisoner abuses (e.g., at the GITMO facility) have propelled terrorism to new heights hence fomenting international instability. The present

conceptual framework suggests that such events reduce individuals' significance and therefore increases their propensity to join extremist groups, engage in violent actions, and self-sacrifice for a cause. This perspective highlights the importance of avoiding inutile provocations and promoting tolerance with respect to different cultures.

A unique and potentially useful contribution of my dissertation was the creation of a psychometric tool to assess individuals' propensity toward self-sacrifice. Aside from the difficulty of getting access to individuals who have been involved in terrorism, researchers have lacked the necessary psychometric tools to measure individuals' desire to become a martyr and to self-sacrifice for an important cause. Without such an instrument, hypothesis testing and theoretical refinement are difficult to carry out. The presently developed self-sacrifice scale could be of importance for interventions concerning the rehabilitation of terrorists. For instance, in the last decade, several countries (Saudi Arabia, Yemen, Singapore, Indonesia) have set up deradicalization programs to augment their counter-terrorism strategies. In essence, deradicalization programs are attempts to change the behavior and beliefs of radicalized individuals who use violence to promote political, religious, or social ends. Because of the plurality of ideologies promoted by different individuals and organizations, deradicalization programs have had no clear theoretical orientations and their effectiveness remains undocumented (Horgan & Braddock, 2010). The self-sacrifice scale can now be considered a valid psychometric tool to quantitatively measure the efficacy of these deradicalization programs in the hope of perfecting them. In addition, the *quest for personal significance* theory proposes a theoretical orientation to guide the primary actors involve in those programs. For example, in the Philippines, imams counseling the detainees could suggest alternative routes to attain significance and change their ideologies by persuading them that the Qur'an does not support the

killing of innocents. Readiness to self-sacrifice could then be assessed longitudinally to quantity whether these interventions have been effective. Individuals who have been deradicalized through a change of their ideological beliefs should then be helped to become reintegrated into the society at large (e.g., through vocational education) to promote their feeling of significance. In the near future, these individuals could become peace promoting agents, giving a credible voice to pacifistic ideologies in their communities.

In summary, the present work suggests that (1) understanding the motivational underpinnings of self-sacrifice through the lens of the quest for significance theory and (2) the ability to measure the construct of martyrdom using a valid research tool may contribute to improving the quality of terrorism research and of deradicalization programs worldwide.

Future Directions

The present research represents the first attempt to empirically investigate the construct of martyrdom. While its findings are encouraging and generally supportive of its theoretical underpinnings, several research questions await further investigation. As with any motivational force, one important question is whether similar affective, cognitive, and behavioral responses are to be expected from everyone in whom the quest for personal significance is activated.

Consider Higgins' (1997) work concerning how people with different regulatory focus respond to losses and gains: Whereas *promotion*-oriented individuals tend to focus on accomplishments and advancement needs which make them susceptible to approaching gains, *prevention*-oriented individuals tend to be vigilant and thus focus on avoiding losses (Crowe & Higgins, 1997). Based on these distinctions, one could anticipate that significance loss and significance gain would have greater impact upon prevention-focused and promotion-focused individuals, respectively. In other words, the effect of the quest for personal significance on

individuals' readiness to self-sacrifice might be moderated by individuals' self-regulatory orientations.

An alternative avenue of further inquiry is to explore ideological characteristics that might moderate the effects of the significance quest on attitudes and behavior. For instance, are there ideologies to which none would subscribe to when the quest for personal significance is activated? If so, what are the common characteristics of these ideologies? Are peaceful and hostile ideologies equivalent in their ability to inspire self-sacrificial behavior or is there an asymmetry in this regard between constructive and destructive ideologies? The present results were ambiguous in this regard and more research into the relative inspirational power of different ideologies is, therefore, called for.

Conclusion

In the last decades, social scientists have been challenged to explain self-sacrifice and suicide terrorism. In an attempt to understand these phenomena, laundry lists of motives have been described. Using the quest for personal significance (Kruglanski et al., in press; Kruglanski et al. 2009) as a guiding framework, the present research examined the notion that self-sacrifice is driven by the desire to "be someone" and "to matter". The results suggest that the quest for personal significance can be activated in numerous ways with a common outcome: A greater desire to give away one's life for an important cause. The results also contain a hint that self-sacrificial behaviors may be more likely to occur when hostile ideologies are made salient.

Appendix A

Original 39 Self-Sacrifice items

1- I would not be ready to give my life away for an important cause.
2- My life is more important than any cause.
3- Under the right circumstances, I would sacrifice my life for an important cause.
4- I would be ready to give my life for a cause that is extremely dear to me.
5- I would not risk my life for a highly important cause.
6- Dying for a higher cause is a noble act.
7- I admire people who are so committed to a cause that they are willing to sacrifice their life for it.
8- Someone who is truly devoted to a cause should be willing to sacrifice his/her life in order to defend it
9- If I truly believed in a cause, I would do whatever it takes to defend it, including sacrificing my life
10- It is senseless to sacrifice one's life for a cause.
11- One should always be willing to put one's life on the line for a cause that is truly important
12- I would be ready to give up all my personal wealth for a highly important cause.
13- I would be ready to sacrifice my personal interest to support a cause that is important to me.
14- I would be willing to give away all my belongings to support an important cause.
15- If I was truly committed to a cause it would be more important to me than any material possession.
16- My personal interest is more important than any cause.
17- There is limit to what one can sacrifice for an important cause.
18- I would not defend an important cause if I had to sacrifice my relationships with my loved ones.
19- I would be prepared to put my self-interest aside to fully devote myself to an important cause.
20- I could never put a cause ahead of my self interest
21- I would be prepared to endure intense suffering if it meant defending an important cause.
22- I have great respect for people who are willing to put an important cause ahead of their self-interest.
23- I would defend a cause to which I am truly committed even if my loved ones rejected me
24- The truly committed must always uphold their beliefs, no matter what the personal cost
25- I would be willing to renounce my deeply held beliefs if defending them came at a great cost
26- A cause could never be so important to be worth sacrificing all my personal possessions
27- I would remain committed to an important cause even if it made me unpopular.
28- I would not support an important cause if others mistreated me for it
29- Upholding a cause to which one is committed in the face of persecution is a sign of great courage
30- I would rather face persecution than give up a cause that is really important to me
31- I would renounce my personal beliefs if I had to face persecution.
32- I would not change my attitude towards a higher cause even if people oppressed me.
33- I would change my attitude towards an important cause to avoid persecution.
34- My attitude towards an important cause would not be affected if others mistreated me.

35- If I was truly committed to a cause, abuses by others would not change my beliefs.
36- I respect those who defend their beliefs despite being mistreated
37- No cause is worth my support if it means that others would hurt me
38- I would defend an important cause even if others insulted me for my beliefs.
39- True supporters of a cause must maintain their beliefs even if others make them suffer for it.

Appendix B

Passion scale

Describe a cause that is extremely important for you.

An important cause for me is: _____

While thinking about this important cause, indicate your level of agreement with each item using the scale below.

Not Agree at All	Very Slightly Agree	Slightly Agree	Moderately Agree	Mostly Agree	Strongly Agree	Very Strongly Agree
1	2	3	4	5	6	7

1. This activity is in harmony with the other activities in my life.	1 2 3 4 5 6 7
2. I have difficulties controlling my urge to do my activity.	1 2 3 4 5 6 7
3. The new things that I discover with this activity allow me to appreciate it even more.	1 2 3 4 5 6 7
4. I have almost an obsessive feeling for this activity.	1 2 3 4 5 6 7
5. This activity reflects the qualities I like about myself.	1 2 3 4 5 6 7
6. This activity allows me to live a variety of experiences.	1 2 3 4 5 6 7
7. This activity is the only thing that really turns me on.	1 2 3 4 5 6 7
8. My activity is well integrated in my life.	1 2 3 4 5 6 7
9. If I could, I would only do my activity.	1 2 3 4 5 6 7
10. My activity is in harmony with other things that are part of me.	1 2 3 4 5 6 7
11. This activity is so exciting that I sometimes lose control over it.	1 2 3 4 5 6 7
12. I have the impression that my activity controls me.	1 2 3 4 5 6 7

Appendix C

Patient Health Questionnaire

Over the last 2 weeks, how often have you been bothered by any of the following problems?

Not at all	Several Days	More than half the days	Nearly every day
0	1	2	3
1. Little interest or pleasure in doing things.			0 1 2 3
2. Feeling down, depressed, or hopeless.			0 1 2 3
3. Trouble falling or staying asleep, or sleeping too much.			0 1 2 3
4. Feeling tired or having little energy.			0 1 2 3
5. Poor appetite or overeating.			0 1 2 3
6. Feeling bad about yourself – or that you are a failure or have let yourself or your family down.			0 1 2 3
7. Trouble concentrating on things, such as reading the newspaper or watching television.			0 1 2 3
8. Moving or speaking so slowly that other people could have noticed? Or the opposite – being so fidgety or restless that you have been moving around a lot than usual.			0 1 2 3
9. Thoughts that you would be better off dead or of hurting yourself in some way.			0 1 2 3

Appendix D

Beck Scale of Suicidal Ideation

For each of the following items, indicate the statement that best describes how you have been feeling over the past week including the current day.

Wish to live.
- 0. Moderate to strong
- 1. Weak
- 2. None

2. Wish to die.
- 0. None
- 1. Weak
- 2. Moderate to strong

3. Reasons for living/dying.
- 0. For living outweigh for dying
- 1. About equal
- 2. For dying outweigh for living

4. Desire to make active suicide attempt.
- 0. None
- 1. Weak
- 2. Moderate to strong

5. Passive suicidal desire
- 0. Would take precautions to save life
- 1. Would leave life/death to chance
- 2. Would avoid steps necessary to save or maintain life

6. Time dimension: Duration of suicide ideation/wish.
- 0. Brief, fleeting periods
- 1. Longer periods
- 2. Continuous (chronic) or almost continuous

7. Time dimension: Frequency of suicide.
- 0. Rare, occasional
- 1. Intermittent
- 2. Persistent or continuous

8. Attitude toward ideation/wish.
- 0. Rejecting
- 1. Ambivalent; indifferent
- 2. Accepting

9. Control over suicidal action/acting-out wish.
- 0. Has sense of control
- 1. Unsure of control
- 2. Has no sense of control

10. Deterrents to active attempt (e.g., family, religion, irreversibility).
- 0. Would not attempt because of a deterrent
- 1. Some concern about deterrents

2. Minimal or no concern about deterrents

11. Reason for contemplated attempt.
    0. To manipulate the environment; get attention, revenge
    1. Combination of 0 and 2
    2. Escape, surcease, solve problems
12. Method: Specificity/planning of contemplated attempt.
    0. Not considered
    1. Considered, but details not worked out
    2. Details worked out/well formulated
13. Method: Availability/opportunity for contemplated attempt.
    0. Method not available; no opportunity
    1. Method would take time/effort; opportunity not readily available
    2a. Method and opportunity available
    2b. Future opportunity or availability of method anticipated
14. Sense of "capability" to carry out attempt.
    0. No courage, too weak, afraid, incompetent
    1. Unsure of courage, competence
    2. Sure of competence, courage
15. Expectancy/anticipation of actual attempt.
    0. No
    1. Uncertain, not sure
    2. Yes
16. Actual preparation for contemplated attempt.
    0. None
    1. Partial (e.g., starting to collect pills)
    2. Complete (e.g., had pills, loaded gun)
17. Suicide note
    0. None
    1. Started but not completed; only thought about
    2. Completed
18. Final acts in anticipation of death (e.g., insurance, will)
    0. None
    1. Thought about or made some arrangements
    2. Made definite plans or completed arrangements
19. Deception/concealment of contemplated suicide.
    0. Revealed ideas openly
    1. Held back on revealing
    2. Attempted to deceive, conceal, lie

Appendix E

Final Self-Sacrifice scale

Describe a cause that is extremely important for you.

An important cause for me is: _____

While thinking about this important cause, indicate your level of agreement with each item using the scale below.

Not Agree at All	Very Slightly Agree	Slightly Agree	Moderately Agree	Mostly Agree	Strongly Agree	Very Strongly Agree
1	2	3	4	5	6	7

1. It is senseless to sacrifice one's life for a cause. (R)	1 2 3 4 5 6 7
2. I would defend a cause to which I am truly committed even if my loved ones rejected me.	1 2 3 4 5 6 7
3. I would be prepared to endure intense suffering if it meant defending an important cause.	1 2 3 4 5 6 7
4. I would not risk my life for a highly important cause. (R)	1 2 3 4 5 6 7
5. There is limit to what one can sacrifice for an important cause. (R)	1 2 3 4 5 6 7
6. My life is more important than any cause. (R)	1 2 3 4 5 6 7
7. I would be ready to give my life for a cause that is extremely dear to me.	1 2 3 4 5 6 7
8. I would be willing to give away all my belongings to support an important cause.	1 2 3 4 5 6 7
9. I would not be ready to give my life away for an important cause. (R)	1 2 3 4 5 6 7
10. I would be ready to give up all my personal wealth for a highly important cause.	1 2 3 4 5 6 7

Appendix F

Mini Markers scale (Big Five)

How Accurately Can You Describe Yourself? Please use this list of common human traits to describe yourself as accurately as possible. Describe yourself as you see yourself at the present time, not as you wish to be in the future. Describe yourself as you are generally or typically, as compared with other persons you know of the same sex and of roughly your same age. Before each trait, please write a number indicating how accurately that trait describes you, using the following rating scale:

Extremely Inaccurate	Very Inaccurate	Moderately Inaccurate	Slightly Inaccurate		Slightly Accurate	Moderately Accurate	Very Accurate	Extremely Accurate
1	2	3	4	5	6	7	8	9

___ Bashful	___ Energetic	___ Moody	___ Systematic
___ Bold	___ Envious	___ Organized	___ Talkative
___ Careless	___ Extraverted	___ Philosophical	___Temperamental
___ Cold	___ Fretful	___ Practical	___ Touchy
___ Complex	___ Harsh	___ Quiet	___ Uncreative
___ Cooperative	___ Imaginative	___ Relaxed	___ Unenvious
___ Creative	___ Inefficient	___ Rude	___ Unintellectual
___ Deep	___ Intellectual	___ Shy	___Unsympathetic
___ Disorganized	___ Jealous	___ Sloppy	___ Warm
___ Efficient	___ Kind	___ Sympathetic	___ Withdrawn

Appendix G

Self-Report Altruism Scale

Check the category on the right that conforms to the frequency with which you have carried out the following acts.

Never	Once	More than once	Often	Very often
1	2	3	4	5

1. I have helped push a stranger's car out of the snow.	1 2 3 4 5
2. I have given directions to a stranger.	1 2 3 4 5
3. I have made change for a stranger.	1 2 3 4 5
4. I have given money to a charity.	1 2 3 4 5
5. I have given money to a stranger who needed it (or asked me for it).	1 2 3 4 5
6. I have donated goods or clothes to a charity.	1 2 3 4 5
7. I have done volunteer work for a charity.	1 2 3 4 5
8. I have donated blood.	1 2 3 4 5
9. I have helped carry a stranger's belongings (books, parcels, etc.).	1 2 3 4 5
10. I have delayed an elevator and held the door open for a stranger.	1 2 3 4 5
11. I have allowed someone to go ahead of me in a lineup (e.g., at Xerox machine, in the supermarket).	1 2 3 4 5
12. I have given a stranger a lift in my car.	1 2 3 4 5
13. I have printed out a clerk's error (in a bank, at the supermarket) in undercharging me for an item.	1 2 3 4 5
14. I have let a neighbour whom I didn't know too well borrow an item of some value to me (e.g., a dish, tools, etc.).	1 2 3 4 5
15. I have bought 'charity' Christmas cards deliberately because I knew it was a good cause.	1 2 3 4 5
16. I have helped a classmate who I did not know that well with homework assignment when my knowledge was greater than his or hers.	1 2 3 4 5
17. I have before being asked, voluntarily looked after a neighbour's pets or children without being paid for it.	1 2 3 4 5
18. I have offered to help a handicapped or elderly stranger cross a street.	1 2 3 4 5
19. I have offered my seat on a bus or train to a stranger who was standing.	1 2 3 4 5
20. I have helped an acquaintance to move households.	1 2 3 4 5

Appendix H

Meaning in Life

Read each of the following statements and decide how much you agree with each according to your beliefs and experiences. Please respond according to the following scale.

Absolutely untrue	Mostly untrue	Somewhat untrue	Can't say true or false	Somewhat true
1	2	3	4	5

1. I understand my life's meaning.	1 2 3 4 5
2. My life has a clear sense of purpose.	1 2 3 4 5
3. I have a good sense of what makes my life meaningful.	1 2 3 4 5
4. I have discovered a satisfying life purpose.	1 2 3 4 5
5. My life has no clear purpose.	1 2 3 4 5

Appendix I

Life Orientation Test

Please be as honest and accurate as you can throughout. Try not to let your response to one statement influence your responses to other statements. There are no "correct" or "incorrect" answers. Answer according to your own feelings, rather than how you think "most people" would answer.

Strongly Disagree	Disagree	Neural	Agree	Strongly Agree
1	2	3	4	5

1. In uncertain times, I usually expect the best.	1 2 3 4 5
2. If something can go wrong for me, it will.	1 2 3 4 5
3. I always look on the bright side of things.	1 2 3 4 5
4. I'm always optimistic about my future.	1 2 3 4 5
5. I hardly ever expect things to go my way.	1 2 3 4 5
6. Things never work out the way I want them to.	1 2 3 4 5
7. I'm a believer in the idea that "every cloud has a silver lining".	1 2 3 4 5
8. I rarely count on good things happening to me	1 2 3 4 5

Appendix J

Fatalism

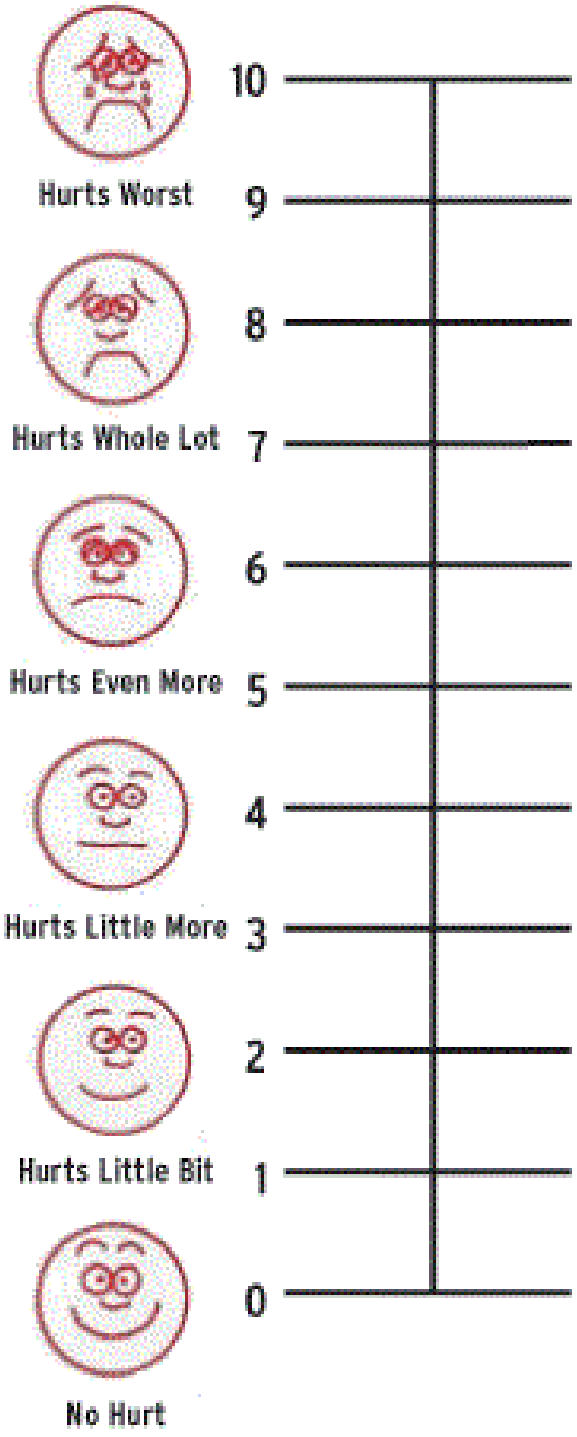
Read each of the following statements and decide how much you agree with each according to your beliefs and experiences. Please respond according to the following scale.

Not Agree at All	Very Slightly Agree	Slightly Agree	Moderately Agree	Mostly Agree	Strongly Agree	Very Strongly Agree
1	2	3	4	5	6	7

1. Most of the time, it doesn't pay to try hard because things never turn out right anyway.	1 2 3 4 5 6 7
2. Planning only makes a person unhappy since your plans hardly ever work out anyway.	1 2 3 4 5 6 7
3. When bad things are going to happen they just are going to happen no matter what you do to stop them.	1 2 3 4 5 6 7
4. When one is born, the success or failure one is going to have is already in one's destiny, so one might as well accept it.	1 2 3 4 5 6 7
5. The wise person lives for today and lets tomorrow take care of itself.	1 2 3 4 5 6 7

Appendix K

Pain scale



Appendix L

Support for Armed Struggle scale

Please read the following statements and decide how much you agree with each using the scale provided.

Strongly disagree	Somewhat disagree	Slightly disagree	Nor disagree nor agree	Slightly agree	Somewhat agree	Strongly agree
1	2	3	4	5	6	7

1. The only way to restore the dignity of Tamils is to revive the armed struggle for a separate state	1 2 3 4 5 6 7
2. The mission of the Tamils should be understood as the LTTE leader described it.	1 2 3 4 5 6 7
3. Fighting is the only way to get a separate state	1 2 3 4 5 6 7
4. Sacrificing my life for the armed struggle is an act of heroism, not an act of terrorism	1 2 3 4 5 6 7
5. Tamil political leaders in Sri Lanka should be selected solely by the supporters of the armed group/LTTE	1 2 3 4 5 6 7
6. LTTE quest for a separate state should be pursued, regardless of situations or circumstance	1 2 3 4 5 6 7
7. Continuing to live with other ethnic groups will mean that Tamils will be discriminated against.	1 2 3 4 5 6 7
8. LTTE goal for a separate state should always guide political and administrative affairs	1 2 3 4 5 6 7
9. The way of the LTTE is the only way to get peace for the Tamil people.	1 2 3 4 5 6 7
10. Those who do not follow the LTTE will be punished	1 2 3 4 5 6 7
11. Armed fight is a personal obligation of all Tamils today	1 2 3 4 5 6 7
12. All countries that do not support a separate state in Sri Lanka should be considered our enemies	1 2 3 4 5 6 7
13. Tamils should strictly adhere to LTTE goal of a separate state.	1 2 3 4 5 6 7
14. Most who do not support a separate state are trying to undermine the Tamil people	1 2 3 4 5 6 7
15. True Tamils should adhere strictly to achieving a separate state	1 2 3 4 5 6 7
16. I think it is important for Tamils to establish a separate state.	1 2 3 4 5 6 7
17. Tamils will not feel fully accepted without a separate state.	1 2 3 4 5 6 7
18. The goal of LTTE is to restore justice for Tamils world wide	1 2 3 4 5 6 7
19. Suicide bombers will be rewarded for their deed in their after life	1 2 3 4 5 6 7
20. Tamils should follow the leadership of the Tamil political leaders.	1 2 3 4 5 6 7
21. Tamils who live in Sri Lanka are obligated to immigrate to other countries	1 2 3 4 5 6 7
22. LTTE is the only true way to achieving a separate state	1 2 3 4 5 6 7
23. Tamils will be able to progress in life, only after getting a separate state.	1 2 3 4 5 6 7

24. True Tamils must listen to those promoting the LTTE quest for a separate state and obey them without question.	1 2 3 4 5 6 7
25. I think it is important to establish a separate state or Eelam.	1 2 3 4 5 6 7
26. Tamils overseas should help their people in Sri Lanka.	1 2 3 4 5 6 7
27. The only way to self-determination is by having a separate state for Tamil people.	1 2 3 4 5 6 7
28. To what extent would you support/oppose this call for an armed struggle?	1 2 3 4 5 6 7

Appendix M

Positive and Negative Affect Schedule (PANAS)

Read each item and using the scale below, indicate to what extent you are feeling those emotions right now.

Not at all	A little	Moderately	Quite a bit	Extremely
1	2	3	4	5
Active				1 2 3 4 5
Alert				1 2 3 4 5
Attentive				1 2 3 4 5
Determined				1 2 3 4 5
Enthusiastic				1 2 3 4 5
Excited				1 2 3 4 5
Inspired				1 2 3 4 5
Afraid				1 2 3 4 5
Ashamed				1 2 3 4 5
Hostile				1 2 3 4 5
Nervous				1 2 3 4 5
Scared				1 2 3 4 5
Upset				1 2 3 4 5

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